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AND

Diseases of Women and Children

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NO. 1

ORIGINAL COMMUNICATIONS.

THE ROLE OF THE GONOCOCCUS IN DISEASE.*

BY

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(With Two Plates and One Illustration. in Text.)

AFTER long, weary years of groping in the dark for the discovery of the causal agent of gonorrhea, the truth was revealed like a flash and the gonococcus stood forth as a tangible and demonstrable morbid entity. Thus ended years of useless speculation, and the flimsy structure of the theory of catarrhal inflammation as a cause tumbled to pieces. Other observers having failed to discover the virulent microbe, Neisser, by means of Koch's stains and a lens of high power and oil immersion, found under the microscope and demonstrated it, calling it the gonococcus. Neisser's modest paper, therefore, marks a luminous era in medical science and history. The claim that the disease is a virulent one was definitely proved and the field was cleared for scientific investigation. This has gone on extensively and industriously and the volume of knowledge elicited by many observers is simply amazing. In prosecuting these studies, surprises have been sprung at every step and it has been found that besides being the causal agent in gonorrhea, this microbe has been shown to be almost ubiquitous in the human body and to spread disease to nearly every organ and tissue. The contemplation of its activities and far-reaching influences and

*Read before the Alumni Association of the City (Charity) Hospital, N. Y., Nov. 13, 1907.

effects really amounts to a revelation. The time is certainly ripe for an up-to-date recital of the manifold potentialities, affections and lesions which are caused by the gonococcus.

DESCRIPTION OF THE GONOCOCCUS.

The gonococcus is a relatively large micrococcus, nearly always appearing as a diplococcus. It measures 0.8 to 1.6 micromillimeters in length and 0.6 to 0.8 micromillimeters in breadth. The gonococci are usually found in pairs, each half of the diplococcus being of kidney shape, and the two thus resemble a coffee-bean or a French roll. In these particulars the gonococcus resembles other diplococci. In its multiplication this diplococcus divides by a transverse cleavage at right angles to the median fissure. Other diplococci, however, develop in a similar manner.

In the acute stage these diplococci are found encapsulated in masses within the pus cell. Early in the infection gonococci are seated upon epithelial cells.

Gonococci are readily recognized in the pus of acute gonorrhea. The clinical features of the infection and the microscopical picture of the discharge and its pus, epithelium, if present, and diplococci, taken together, are so striking that a mistake can scarcely occur.

There are a number of signs which, when taken together offer strong presumptive evidence that the microbe in question is the one just named. These are:

1. The shape, which is roundly oval, with its median fissure and its roll-like or coffee-bean appearance, and its lengthwise fissure.

2. The size: They are large diplococci, and in their development are variable and resemble other diplococci.

3. The grouping is in single pairs, in fours, eights, sixteens, etc. They never occur in chains.

4. Their intracellular position within the protoplasm of the pus cells, and also scattered between the cells in varying numbers.

5. Gonococci are readily stained by aniline colors, and quickly lose their staining by Gram-Roux's method. This quality is very characteristic of the gonococcus, but it is also possessed by certain other diplococci, by streptococci, and by staphylococci.

6. The crucial tests center in cultivation and experimental inoculations. (See Plate I, 1, 2 and 3.)



Fig.



Fig.

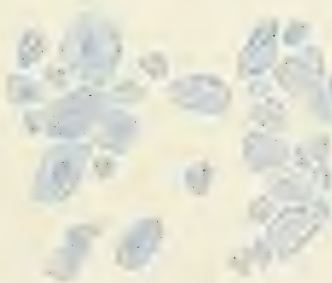


Fig.

TAKEAWAY: This is a very common finding in the placental site.

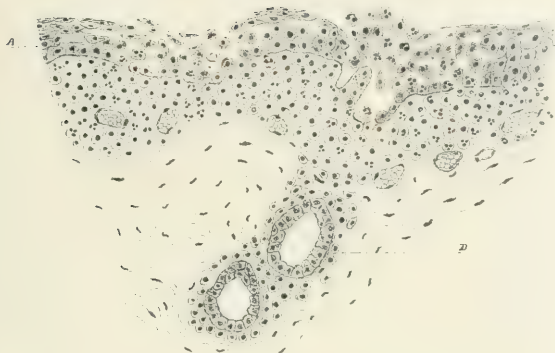


Fig. 4.



Fig. 5.

TAYLOR.—THE ROLE OF THE GONOCOCCUS IN DISEASE.

Fig. 4.—Invasion of the tissues by the gonococcus.

A section of the urethral mucous membrane in acute gonorrhea which shows desquamation and pus cell infiltration of the epithelial layer, infiltration of the subepithelial layer with small round cells. The glands of Littre are also surrounded by a zone of small round cells. The section also shows the invasion of the epithelial layer by free gonococci in files and masses, as well as present in occasional leukocytes scattered about in the desquamating epithelium.

A, B, Epithelial layer of the urethra.

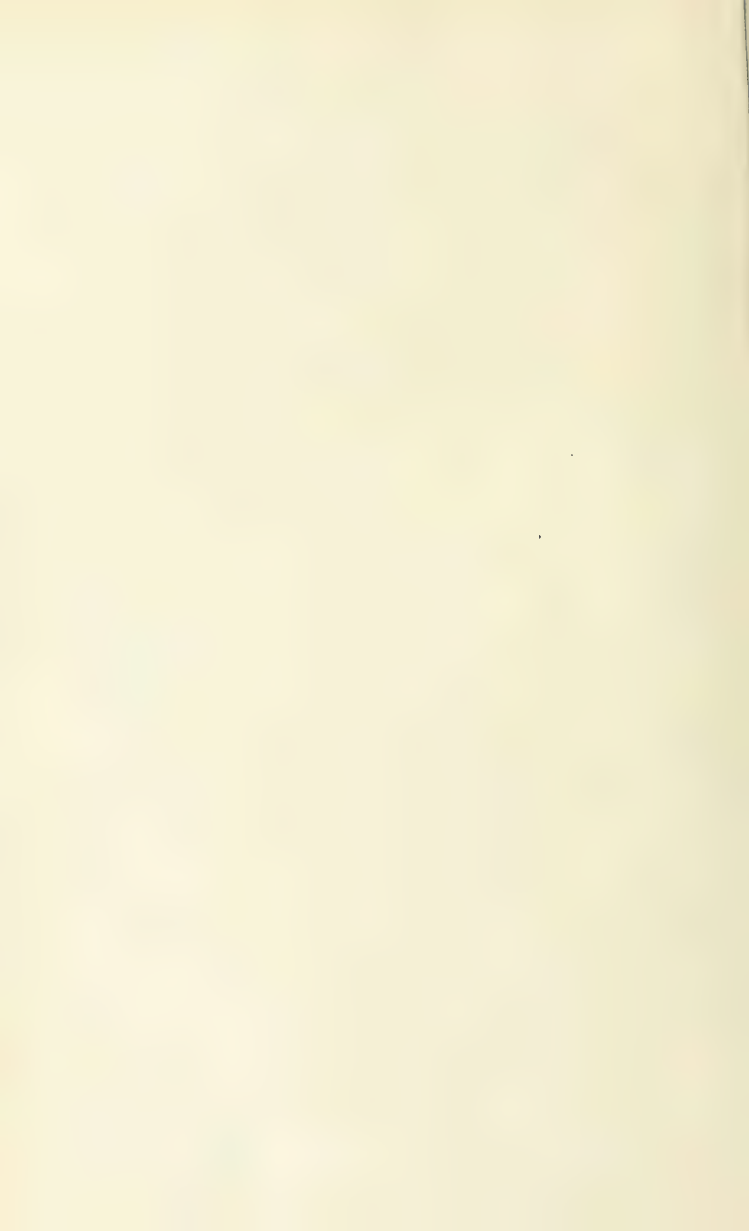
C, Subepithelial layer infiltrated with small round cells.

D, Glands of Littre surrounded by zone of small round cells.

(At B the epithelial layer is cut somewhat obliquely so that it has the appearance of being slightly thickened, while at A it has the correct thickness.)

The desquamation of the epithelium toward the right of the section is to some slight extent artificial, due to a fold in the urethra during fixation.)

FIG. 5.—Transverse section through urethral canal showing round-celled infiltration around urethra and mucous follicles.



INVASION OF THE TISSUES BY THE GONOCOCCUS AND ITS RESULTS.

The gonococcus being deposited in the urethra or on other mucous membranes, soon gains a foothold on the superficial epithelial layers and luxuriates. The microbes then penetrate between the epithelial cells, which have become swollen, into the soft protoplasmic substance. The cocci themselves are the active agents in the attack, and they are not then enclosed in pus cells. The invasion is through the cement substance between the cells. The microbes invade in files and in masses, and from them make further incursions. When they get to the subepithelial connective-tissue layer, reaction occurs and great numbers of white blood cells escape from the dilated capillaries, together with much serum (chemotaxis). Pus breaks through the epithelium and carries it away, permitting further invasion up to the papillary layer, when it stops. (Fig. 4.) Pus cells filled with gonococci may now be seen (phagocytosis), but thus early free gonococci are most numerous. Coincidentally with this microbial invasion the inflammatory process increases. Fig. 5 shows the whole lumen of the urethra to be surrounded by a deep ring of small round cells and proliferated connective-tissue cells (Fig. 6). Unless resolution occurs or is induced, all these new cells tend to increase, and the condition known as chronic urethritis with soft stricture results. (Fig. 6.)

When gonorrhea has become chronic, necessarily considerable time will be required for the disease to heal, since in the affected regions all this desquamated epithelium must be restored and the infiltration of small round and connective cells must be absorbed before the urethra can become healthy again.

From this urethral focus contamination of the organism may quickly or slowly result.

In most cases the gonococcus invasion stops at the subepithelial connective-tissue layer, but in some for unexplained reasons the further incursion is through that layer as far as the radicles of the venous and lymphatic plexuses; then greater or less systemic infection is produced.

BIOLOGY.

Many facts as to the structure and development of the gonococcus have been ascertained, but there has been little decided progress made. Some observers claim that there are many aberrant types of this microbe which differ in tinctorial and pathogenetic

effects from those looked upon as typical. The change or modification of view is dependent upon the analogical evidence offered by the true and pseudodiphtheria bacilli which are considered to belong to one class. Thus, it is claimed there are several variants from the type form. In this category is included the pseudogonococcus, and there are those who believe that the meningococcus and the diplococcus intracellularis are related

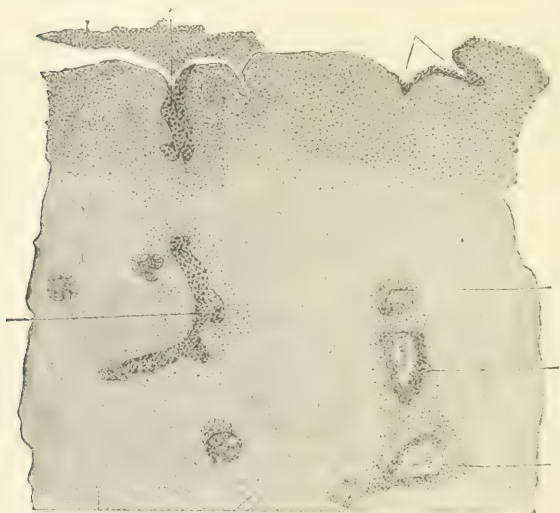


Fig. 6.—A segment of roof of urethra showing round-celled infiltration into the mucosa and around tubular ducts. (Higher magnifying power.)

to the gonococcus group. This subject has been ably presented by Schonz,² who claims that the cultures of gonococci of Urbon and Weldholz upon ascites fluid, glycerine agar, bouillon gelatine, glucose agar and horse serum rob the gonococcus of one of its distinguishing characteristics, namely, its relation to artificial media.

The causes of the intracellular site of the gonococcus is still in doubt, also the question whether they actively penetrate the cells or are engulfed in a passive way by phagocytosis. Whether the germs multiply within the interior of the cells is also not

definitely known. Phagocytosis certainly rids the urethra of many gonococci, which are thus rendered inoffensive and cease to multiply.

Zupnik's³ experiments are of interest. He, with four other physicians, inoculated the urethra with meningococci. In one experiment several loops of a pure culture of a typical meningococcus were put into the urethræ of two of these persons, but only an ephemeral local irritation was caused which subsided within twenty-four hours. Then a growth of meningococci of a strain which bacteriologically could not be distinguished from the gonococcus was inoculated into the urethra of a physician who had never suffered from gonorrhea. The result again was negative. In the third experiment meningococci contained in the still warm cerebrospinal fluid of a patient who, in addition to the meningitis was also suffering from acute gonorrhea, were introduced into the urethræ of two physicians, one of whom had had and the other of whom had not had a previous gonorrheal infection; the result of this experiment was also negative, although the fluid contained numerous cocci in every microscopical field. The demonstration of the pathogenic difference of the two organisms is certainly interesting.

TOXINS.

There can be no doubt that the toxins of gonococci play a very considerable part in many diseased conditions. In acute gonorrhea there is often evidence of their action on the veins and lymphatics of the penis and in the inguinal ganglia. Many cases of early prostatitis are of this origin, and mild and ephemeral epididymitis, phlegmasia of Cowper's glands and perhaps of the seminal vesicles may be due to them. The fever, malaise and debility in early gonorrhea in many instances are undoubtedly due to their morbid action. In like manner ephemeral, painful affections of the pleura, heart muscle and valves, as well as liver, spleen and peritoneum, are due to this toxin diffusion. In the same category we must mention the mild forms of tendon synovitis, of articular synovitis and bursitis. In later stages the same cause may operate on the cerebrospinal axis and their adnexa and result in general ill health with gastric disorders, emaciation, debility, and neurasthenia.

For obvious reasons, *i. e.*, lack of material, want of technical knowledge and laboratory training, there are few scientific contributions on this subject.

Shaeffer⁴ inoculated three men suffering from chronic gonorrhea with a filtered solution of the cultures of the gonococcus. In each case he produced a mild and ephemeral urethritis. In the pus of these cases there were many polynuclear leukocytes, much mucus, but no bacteria.

It is readily supposable that many cases of mild relapses of gonorrhea are really due to this attenuated toxin infection.

Panichi⁵ experimented on himself (1) with the cultures of gonococci holding dead microbes; (2) with filtered cultures, and (3) dead gonococci deprived as far as possible of toxins. He concludes that the irritating effects on the urethra are caused by the toxins elaborated by the microorganism, and that the cadavers of the microbe have little, if any, active effect. He thinks that injection of toxins in all stages of gonorrhea induces a greater or less reaction. The increase in the inflammation thus artificially produced in the urethra is not harmful to the existing infection, and their repetition seems to be of salutary effect.

This whole subject offers a field for further scientific investigation.

NONGONOCOCCIC URETHRITIS.

This subject must be discussed and settled before we are in a position to study the Neisser microbe in its relations to the human urethra.

Though it has been proved beyond doubt that the gonococcus is the essential causal agent in virulent urethritis, it is necessary to consider the effect of several microbes in the production of urethral suppuration. In 1887 it was thought that the discovery by Lustgarten and Mannaberg⁶ that in the normal urethra a variety of microorganisms grow would have a profound effect on the Neisser gonococcus status, and that facts invalidating Neisser's claims would be forthcoming. The bolt struck and spent, but very little tangible good resulted from it.

These observers showed that in the normal urethra a variety of microorganisms grow. Most of these microbes are harmless parasites or saprophytes. There were three, however, which, the authors thought, deserved especial attention. They are, (1) a pyogenic coccus, the staphylococcus; (2) a bacillus resembling the tubercle bacillus, and probably identical with the smegma bacillus; and (3) one or several species of diplococci, which resemble completely Neisser's gonococcus in shape and tinctorial qualities, especially in being decolorized by Gram's method.

The establishment of the fact that in healthy urethræ micro-organisms known to have a pathogenetic power lurk and lie dormant, is of great importance in further perfecting our knowledge and in removing obscurities from many seemingly queer or anomalous cases. Besides these pyogenic bacteria there are several, if not many, others which were thought to be innocuous, but which may, perhaps, under favorable circumstances, become harmful. These observations led to the study of this question by several other observers, who have, in the main, confirmed their statements. Thus, Steinschneider,⁷ a pupil of Neisser, made an exhaustive study of the bacteriology of the urethra in a normal state, and also in subjects suffering from acute and chronic gonorrhea. As a result, he found virulent and inert organisms in healthy urethræ, and also, like Bumm, various other organisms in gonorrheal pus besides the gonococci. He conceded that a diplococcus, or, as it may be termed, a pseudogonococcus, which in a measure resembles the gonococcus, is found and may lead to doubt and error in about 5 per cent. of cases.

It may be mentioned that as a curiosity this pseudogonococcus is interesting, but it has not since played a leading rôle in the study of the etiology of gonorrhea.

There is still further evidence, however, in the same direction and strain. A number of capable men have separately studied this question, and have shown conclusively that many micro-organisms are found in the healthy urethra, most of which are nonpathogenetic. There is considerable unanimity of statement that microbes very closely resembling the gonococcus, and very difficult to distinguish from it, are quite constantly found. Then, again, it was very clearly proven that such microorganisms as the staphylococci and streptococci, whose virulence under favorable conditions is well known, have been frequently found in the normal urethra. The net results of the studies thus far made into the bacteriology of the normal and diseased urethra go to show that the gonococcus is the most constant and potent morbid agent in the production of urethral inflammations, but that a few other microorganisms also play an active rôle in this direction.

Guiard⁸ very pertinently remarks¹ that the gonococcus in taking possession of the urethra commences by suppressing (*étouffant*) all the other saprophytic microbes which had since a long time held the right of domicile. But soon, in proportion as its vitality relaxed, the microbes began to reappear, to in-

crease little by little in numbers, and very often a time arrived when the gonococcus disappeared completely, whilst the secondary infection persisted and indefinitely prolonged the urethritis.

The studies into the nature of the flora of the urethra went on until now there are forty essays on the subject. The last and perhaps most important one is by Pfeiffer, who presents the following conclusions:⁹

1. The normal urethra in its deeper portions is inhabited by numerous germs.

2. The more important are the pseudobacillus of diphtheria and the streptobacillus of the urethra, which can under certain circumstances produce urethritis and postgonorrhoeic cystitis.

3. No one of the varieties has been demonstrated as pathogenic to animals.

4. An important point is that we did not find typical streptococci, nor the bacillus coli communis.

In spite of all this laboratory work the fact stands out clearly that the cases of gonorrhea in which any other agent than the gonococcus is the *materies morbi* are compared to the whole number of infections simply infinitesimal. Observers report cases of streptococcic gonorrhea, pseudodiphtheritic as clinical rarities, like two-headed animals and yellow diamonds.

The general subject of nongonococcic urethritis is so admirably and conservatively presented by Grosz¹⁰ that I take pleasure in paraphrasing his conclusions:

"As regards the etiology of so-called chronic nongonococcic urethritis, a positive verdict cannot as yet be rendered. Upon the basis of the bacteriological examinations, it is probable that the exciting agents are not uniform in character. Pseudodiphtheritic urethritis may be classified as an example of the chronic form, along with the cases of streptococcus urethritis or colonic urethritis, which take an acute course. As indicated by these designations, the corresponding bacteria (colon bacillus, streptococcus) are held responsible in these cases as the exciting agents. These various microorganisms, like the pseudodiphtheritic bacillus, are likewise met with in the normal urethra. It must either be assumed that in those cases in which a so-called colonic, streptococcus or pseudodiphtheritic urethritis originates in an individual, the corresponding bacteria did not previously exist in this particular urethra—which will of course be a difficult matter to demonstrate—or that these and other saprophytic microorganisms may become facultative patho-

genic agents, or finally that under certain insufficiently known conditions, the urethra undergoes such an alteration as a nutritional soil as to favor the growth of one microorganism at the expense of the remainder, which are otherwise present. Certainly we are not justified at present in assuming a strict causative connection between the bacterial findings and the existing urethritis, although the bacterial findings serve for the characterization of the disease."

"The designations 'streptococcus urethritis,' 'colonic urethritis,' etc., should accordingly be abandoned for the present, since it is preferable to refer to the condition as urethritis with predominant or exclusive streptococcus, colon bacillus, pseudodiphtheritic, etc., findings.

"In the present state of our knowledge the objections which were originally raised against the etiological significance of the gonococcus have been definitely overcome. Practically all the complications of gonorrhea have been demonstrated as due to the gonococcus; and certain remote effects are now brought into an obscure connection with the poisons (toxins) produced by this germ. This strictly limited etiological and clinical field is gradually becoming surrounded by highly important neighbors. The more deeply we penetrate into the knowledge of the diseases of the urethral, vaginal, and uterine mucosa, the more we are forced to realize that in addition to the most common cause of these affections, namely, the gonococcus, other bacteria must likewise be capable of producing and maintaining inflammatory processes in these regions."

A little retrospect is now relevant. It is no longer necessary to dwell on the old-time views as to nonvirulent urethritis; they may be briefly mentioned. We know that such internal causes as gout, rheumatism, herpetism, tuberculosis, syphilis, diabetes, malaria, typhoid fever and mumps were simply accessory conditions, and that the gravamen of attack in all cases is primarily by microbic infection of the urethra. The same remarks apply to the urethrites said to be due to aliments, beverages and medicines (lobsters, crabs, asparagus, watercress, horse-radish, radishes, mustard and spices; beer and ale, wine, cider, alcoholics and champagne; and cantharides, arsenic, salicylate of soda, nitrate of potash, iodide of potassium and turpentine). None of these agents themselves causes supuration except in cases in which there has been damage or hyperemia of the urethral canal. Urethritis may be provoked

by catheterism, by sounds particularly (*à demeure*), and foreign bodies; in fact, by any violence to the urethra. Irritant injections of all kinds (not forgetting Swediaur and liquor ammoniae) come under the head of provocative not essential urethrites; in this category we may include urethral calculi, vesical calculi, seminal vesicle and prostatic concretions and vegetations. Likewise the urethral catarrhs of masturbators, of men who have had violent and prolonged erections, who have been guilty of excess in coitus and in depraved sexual practices are not truly gonorrheal. To sum up, any damage to the urethral canal, any irritant substance passing in the urine through it, any traumatism, surgical or otherwise, any agent which acts deleteriously upon the mucous membrane, any long-continued hyperemia of the canal—each and all of these may set up urethral suppuration. Such cases are not those of gonorrhea; they are more or less ephemeral urethrites. One is warranted, therefore, in asserting that in the vast majority of cases the gonococcus is the virulent causal agent; in a limited number of cases other potential microbes may be causative of an allied condition.

SYSTEMIC INFECTION: SEPTICEMIA.

While the frequent occurrence of gonorrheal arthritic lesions and various endocardial inflammations in the course of gonorrhea showed that its microorganism invaded the general economy, the definite knowledge that the gonococcus was the cause of a true septicemia was not at hand until W. H. Welch,¹¹ in 1895, demonstrated the gonococcus in cover glass and culture media from the blood of a living individual. In 1896 this discovery was made by Ahman, of Stockholm, who thought he was the pioneer,¹² as do many observers on the Continent.

This item of enlightenment was most important, and definitely placed gonorrhea as one of the sources of septicemia.

The subject has been further elaborated in the essay of Barbiani, who found the Neissermicrobe in the blood of a gonorrheic diabetic, and who terms the condition gonococcemia.

In a case of gonorrheal rheumatism seemingly caused by acute trauma, Unger¹³ found the gonococcus in the urethral secretion and in the blood. In the discussion of this case the fact was brought out that in cognate cases blood examinations should be very promptly made, since the gonococcus is quickly destroyed by the blood serum. Clinical investigation very

clearly shows that while gonococci may cause a true septicemia, the toxic effects of the serum are so prompt that the infection in most cases is soon destroyed.

Oro¹⁴ has brought out the interesting point that out of three cases of acute gonorrheal rheumatism he examined the blood at a distance from the joint and in one case by culture experiments he found the gonococcus.

The mechanism of generalized infection is not clearly made out, but the following observation of Dreyer¹⁵ throws much light on it. It has long been known that acute gonorrheal urethritis is sometimes accompanied by gonorrheal dorsal lymphangitis. Noble (1901) dissected several cases of this lesion and found that a portion contained gonococci, five cases in nine. There is one case on record in which general infection could be traced to a dorsal lymphangitis in acute gonorrhea. Dreyer reports a case which he terms lymphangitis-abscess. No gonococci were found microscopically, but clinically the case was perfect. The local condition developed into septicemia. Dreyer believes that gonococci may live in a latent state in the lymphatics of the penis.

In this case, though hybernating, the microbe preserved its virulent qualities and later caused general sepsis. The study of gonorrhoeic inguinal adenitis has been carefully made by Hansteen¹⁶ who conclusively found the gonococcus in the pus of three cases of these buboes, thus showing the infection by means of the lymphatics. In several instances in which a virulent strain of the gonococcus was found, other pyogenic organisms were also present. In this connection the confirmatory evidence of Blasi¹⁷ is significant. He examined the purulent secretions in the nine cases of chronic gonorrhoeic buboes and only found a staphylococcus. In most such cases the gonococcus has disappeared and pus microbes dominate the field.

In general gonorrheal infection begins in a mild way, by the invasion and intrusion of the gonococcus into the lymph spaces and veins of the parts attacked, in men usually in the penis. It may cause slight or more severe reaction, but as a rule such is the antitoxic condition of the blood serum that it is more or less promptly killed. When, however, the infecting focus is extensive and the microbes are virulent, besides infecting the blood, metastases are produced, heart, joint and other lesions are developed. In these cases besides the infection of the blood stream, the activity of the processes in the local

lesions adds further to general poisoning and severe illness and death may ensue.

In a general way the pathogenesis of gonorrheal septicemia has thus been given here, but further elucidation of the blood changes in gonorrhea present many interesting, important and intricate considerations, which have been carefully studied and described by Georgi Eugenio¹⁸ who states that changes in the blood may be observed during the second week of the gonorrheal infection. They are mild in anterior urethritis, more severe when the totality of the urethra has been involved and when complications have developed. In general there is disorganization of the hematoblasts and the production of hypoglobulia. Leukocytosis is not well marked when the anterior urethra is involved, but it increases sensibly when the process extends to the posterior urethra, and particularly when epididymitis supervenes. The acme of the leukocytosis then is found during the acuity of the process and its diffusion during complications. The proportion of polynuclear neutrophiles is diminished in the early days of the infection and the process keeps on proportionately to the severity of the disease. The polynuclear grains are often much augmented, but it is impossible to establish a relation between this condition and the various phases of the morbid process.

The number of lymphocytes is constantly increased in acute urethritis, and their number is in inverse proportion to that of the polynuclear and in direct proportion to that of the eosinophiles. The extension of the process to the deep urethra and the occurrence of complications does not seem to markedly influence the number of lymphocytes. The proportion of basophiles is not affected in gonorrhea.

The eosinophiles of the blood increase in number during the second week of the infection, but there is no relation between this augmentation and the more or less great abundance of the gonococci in the pus. When the process extends to the deep urethra and when complications develop the eosinophiles increase in a remarkable manner. They increase *pari passu* in the blood and in the pus, but become proportionately more abundant in the blood.

SWELLING OF SPLEEN.

Babes and Sion¹⁹ and Honl²⁰ have reported cases of enlargement of the spleen, together with high temperature, in cases of acute gonorrhea.

CARDIAC AFFECTIONS.

Though rare, cardiac complications of gonorrhea are observed from time to time and several cases are reported. In general men rather than women are thus affected; perhaps owing to their greater activity of life. In all cases there is synchronous involvement of one or more joints; in many general gonococcic septicemia and ill health.

The fibrous and serous structures of the heart are the parts primarily attacked, the endocardium most frequently, the pericardium in a smaller percentage of cases. The heart muscle has been found to be invaded.

There are grave and fatal cases, and those in which recovery takes place.

The following recital of quite recent cases is of much interest.

Brodier's²¹ first case was that of a woman, nineteen years old, who, following gonorrhea, had chills, fever, painful swelling of wrist and other joints, and an erythematous rash over whole body. The fever was persistent; the heart became enlarged; there were bruits at the valves, and evidence of aortic involvement. She gradually convalesced.

The second case was that of a twenty-eight year old man who had various articular pains and swellings. The heart was attacked, and valvular and aortic bruits were heard. Under salicylate of soda and blisters he got well, as did the woman who was similarly treated.

Lartigan's²² case was that of a man (two months gonorrheic), twenty years old, who entered hospital with a fever and systolic bruit. He died in coma. At the autopsy ulceration of the mitral valve, with adherent clot, was found. Blood cultures of gonococci were successful.

These cases show very clearly the benign and the malignant forms of gonococcic heart invasion.

AFFECTIONS OF THE CEREBROSPINAL SYSTEM.

Many well-attested cases seem to prove that gonococcic infection is the causal agent in a number of affections of the brain and spinal cord. The main difficulties in securing direct proof are, first, the infrequency of available pathological material for study, and, second, the evanescence and instability of the infecting agent, whether coccic or toxic. Many cases have been reported which are lame and halting; vigorous skept-

ticism is warranted concerning all recitals, since from this procedure light and progress may result.

The old-time cases of Peter, Chavier and Fevrier, Jaroschewski, Dufour and Panas were more or less convincing and served a useful purpose as pathfinders. Modern observation made it clear that these nervous affections may be mild and ephemeral, severe and chronic, and that in some cases much suffering, grave structural disability, and even death may result.

Eulenberg²³ thinks that these leading forms of localized nervous affections may be summarized: (1) Neuralgic affections like sciatica; (2) muscular atrophy and atrophic paresis, and (3) gonorrheic neuritis and myelitis.

Cases of acute myelitis (V. Rad, 1900, and Block, 1906), polyneuritis (Kucharzewsky, 1900), sciatica (Batut, 1901) and lethal meningitis in a child (D'Amato, 1900) seem worthy of acceptance as being of gonococcic origin.

Herzog²⁴ reports the case of a twenty-one year old pregnant woman who, at her first coitus, was infected with gonorrhea, after which symptoms of bladder and rectal incontinence, impairment of hearing exaggerated after her delivery, and exalted cutaneous sensibility, paresthesia of upper and lower limbs were complained of.

Renault's essay²⁵ on two cases of chronic dorsolumbar myelitis and of ankylosing arthritis of the vertebral column, with perhaps the complication of syringomyelitis thought to be due to the gonococcus, is worthy of careful study. Dufour's essay²⁶ may be read with profit.

INFECTION OF THE PLEURA.

Occurring less frequently than cardiac and arthritic complications, gonorrheal pleurisy has been established as a pathological entity. It is probably of hematic origin.

Lemoine and Gallois²⁷ report a case in which gonococci were demonstrated in the pleural effusion. A male, aged thirty years, had gonorrheal urethritis in July, 1896, which was neglected and lasted several months. February, 1897, the patient was taken with pain in the left side of the chest. March 25, 1897, aspiration was performed and fluid withdrawn. It was necessary to aspirate often, and by the end of August, 1897, twenty-five liters had been withdrawn. The pleural fluid showed gonococci in pure culture. A rib was resected to afford

better drainage, but the patient sank steadily and died November 21, 1897.

In sixteen cases of pleurisy reported, four were of gonorrheal origin without doubt, since the organisms were found in the pleural fluid.

Several other interesting cases have been reported.

The case of Mazza (1894) was that of a girl of eleven years who had a gonorrheal discharge which was followed by polyarthritis, endocarditis, pericarditis and double pleurisy. In the pleural exudate were leukocytes, endothelial cells and diplococci. Pure cultures of gonococci developed on agar and blood serum from the pleural fluid.

Bertrand's case was taken with pain in the side some days after the appearance of a gonorrheal discharge. Signs of effusion prompted thoracentesis. Fluid was obtained and at the end of aspiration a deposit was withdrawn. Cultures were negative, but the deposit showed by Gram's stain organisms which corresponded with gonococci in their morphology.

Cardile's case was that of a young woman who contracted gonorrhea from her husband. Later pleurisy developed, which lasted two months, without other symptoms. By centrifuging the pleural fluid gonococci were demonstrated alone; later they were found associated with another diplococcus.

In all probability many of the ephemeral pleural pains during acute gonorrhea are caused by gonococcus toxins.

PHLEBITIS.

It is stated by Heller that there are twenty-five cases in literature (twenty men and five women) in which phlebitis was observed as the result of gonococcic infection.

Caraës²⁸ reporting several cases, states that they are produced by the gonococcus alone or in connection with other microbes. The prognosis is in general good; suppuration rarely occurs; lung embolus is exceptional, but edema of the lower extremities and functional impairment of parts may occur.

Voss²⁹ observed a case in the fifth week of infection in which there was thrombophlebitis of the dorsal vein of the penis, which he excised. According to several authors, thrombosis of peripheral blood-vessels is not infrequently observed in cases of general gonococcic infection.

Batt's³⁰ essay and that of Heller³¹ may be read with profit.

It may be mentioned that rheumatism is a constant con-

comitant and that varicose veins may tend to favor the development of the phlebitis.

CUTANEOUS AFFECTIONS.

So many authoritative essays have been written on the development of cutaneous lesions due more or less remotely to gonorrheal infection, that the opinion is warranted that these conditions are etiologically related.

The most striking skin lesions are those of hyperkeratosis, and many illustrative cases have of late been reported by Böttcher, Buschke, Chauffard, Jacquet, Jeanselme, Lannois, Malherbe, Robert and Vidal, the latter author having been the pioneer in 1893.

Baermann's case³² and that of V. Roth³³ are the most recent, and illuminating on the subject. The eruptions appear several weeks after gonococcic infection, usually coincidently with single or multiple arthritis in patients with impaired health. The lesions may be disseminated over the body or localized to the hands and feet, particularly on the fingers and toes, from which the nails may fall. The head and face do not seem to be affected. The eruption is scaly, like psoriasis and seborrhea sicca; the scales, of dirty yellow color, being thin and adherent, and in extreme cases so copious that the parts present an oyster-shell appearance. There is no reaction of the contiguous integument. No gonococci are found in the eruption, but in the urethral secretion, and sometimes in the joint effusions, they are more or less copious. The course of the skin lesions depends on that of the gonorrheal and arthritic affections; cure ensues when the gonorrhea ceases, the joints subside, and the health improves.

The essential lesion is papillary dermatitis, with great parakeratosis.

A very striking case is reported, with illustrations, by Stanislawski³⁴ which can be read with profit. It is noteworthy that Perrin Klippel, Besnier and others have reported cases in which scarlatiniform eruptions have been observed in gonorrheics who had not taken antiblennorrhagics; that Finger has seen the association of purpura hemorrhagica with urethrocystitis of gonococcic origin; and that many observers have noted the sequence of polymorphous erythematous eruptions in the wake of gonorrhea uncomplicated by antiblennorrhagic drug poisoning.

Orlowski³⁵ observed a case of chronic urticaria which he thinks he traced to gonorrhea.

ULCERATIONS OF THE SKIN AND ABSCESES.

It has been definitely shown that the gonococcus may cause pustules and abscesses on the skin and subcutaneous connective tissues and in the lymphatic ganglia. I have seen a well-marked phlegmonous periungual abscess in a young gonorrheic, in the pus of which lesion the gonococcus was found. Under similar circumstances I have seen abscesses of the dorsum of the hand, of the scrotum, and of the inner aspect of the thighs in men and women, so that the old contention supported by Wertheim with experimental proof, that the subcutaneous connective tissues did not react in a phlegmonous manner to the irritation of the gonococcus even when subcutaneously injected therein, has been proven to be false. The section on follicular lesions also contains cognate facts.

Two luminous cases have been reported, one by Saloman and the other by Gravagna.

Saloman's³⁶ was that of a twenty-year old gonorrheic girl, who had swelling of both labia and a deep ulceration of the edge of one labium minus resembling a chancroid and covered with a crust. Examination failed to show the streptobacillus of Ducrey, but many gonococci were found.

Gravagna's³⁷ case was that of a very cleanly prostitute twenty-two years old. At the decline of gonorrhea a number of large and small nut-sized abscesses developed on the inner surface of the vulva, sheath of clitoris, labia minora and mons veneris, which healed promptly after incision. Gonococci were found in the pus.

I found it very difficult to demonstrate the gonococcus in the gonorrheic pus of inguinal abscesses, subcutaneous or adenitic, for the reason that in most instances other microbes dominated the microscopic field. Reale,³⁸ however, has succeeded in finding and cultivating the Neisser microbe in several cases of inguinal phlegmon in gonorrheics, and also in the pus in cases of periurethral abscess. He also had trouble in differentiating this microbe from other microorganisms.

FOLLICULAR LESIONS.

Much loose statement has been made regarding the longevity of the gonococcus, and assertions as to its incurability have been recklessly made.

There can be no doubt that in various portions of the genito-urinary tract of men and women there are hibernating foci seated in follicles, cysts and glands, but their existence simply shows two things—first, that the gonococcus is a tenacious holder of the soul, and second, that the surgeon has not been as active and adroit in destroying him as he should be. Many of these cases, which are considered the opprobria of medicine, are merely instances of medical lack of knowledge and inertia.

Within recent years much scientific light has been thrown on many of these cases. A recapitulation is of interest.

Preputial follicles opening in the free end of the sheath in the form of minute sinus, and of cherry-stone size, abscess-formation are of not infrequent occurrence. Jadasohn, Fabry and Pick found gonococci in these lesions. Such cases are usually seen in young men, acutely or remotely gonorrheic. Hallopeau³⁹ and Lemierre have reported a case in a man, sixty-four years old, who had gonorrhea twenty-five years before. Microscopic examination warranted the diagnosis gonococcic.

Queyrat⁴⁰ observed an interesting case in a boy seventeen years old. Without previous gonorrheal infection he had a cherry-stone sized abscess of the balano-preputial furrow, which gave issue to a secretion which contained undoubted gonococci. It seems singular that this lesion did not infect the urethra.

Follicles of the skin of penis may be the seat of gonococcic invasion, and also of ordinary pyogenic microbes, lesions which run an indolent course and give on pressure a droplet of pus. An exaggerated instance of this condition is published by Baudoin and Gaston, in which the many follicular pustules extended from the end of the penis to the mons Veneris.⁴¹

Juxta-urethral follicles, probably persistent Tyson's glands or aberrant Littre's follicles, are sometimes the seat of gonococci which, in recrudescence, may lead to urethral involvement. The gonococcic nature of these lesions has been proved by Pezulli⁴² and by Lanz,⁴³ whose microscopic illustrations are noteworthy.

In the urethral canal gonococci foci are found, on and within the meatus, in the fossa navicularis, in Littre's follicles, and in Cowper's glands. I have seen several cases in which follicular gonococcic lesions began at the inception of the infection and in the acute and chronic stages. Such invasions of the frenal fossa are not very uncommon. In all of these instances proper

surgical technic and activity will rid the patient of this infirmity. Such cases may require patient study and vigorous therapy, but they should not be lightly classed as incurable.

These same remarks also apply to certain hibernating lesions in women, now to be mentioned.

Chronic gonorrhea in Skene's urethral glands, urethral follicles, follicles of the vulva, vestibulo-vaginal glands (Guerin), para-urethral follicles and Bartholin's glands is sometimes seen. Besides these localized lesions, we find diseased areas in the vagina and involvement of the os uteri and uterus.

It is well to remember that in both men and women these localized deposits may be the result of the gonococcus or of secondary pyogenic microbes. In the greater number of cases it is probable that the gonococcus is the starting point of the trouble.

Jesionek⁴⁴ has observed juxta-pudental folliculitis due to the gonococcus in four cases out of 800 of women suffering with venereal diseases.

ARTHRITIS, GONORRHEAL RHEUMATISM, BURSITIS AND TENDOVAGINITIS.

Koenig's division of cases of gonorrheal arthritis and rheumatism is clear and clinically true. These are:

1. Hydrops gonorrheicus. 2. Arthritis serofibrinosa et catanea.
3. Arthritis purulenta (empyema of joints). 4. Arthritis phlegmonosa.

It may be remarked that the gonococcus, like other pathogenic microbes, is capable of causing all grades and varieties of inflammation in all tissues.

It is interesting to note that Lindemann, in 1892, found the gonococcus in pure cultures in a case of gonorrheal arthritis, as did Petrone in 1883, by means of the microscope. Since that time many observers, by culture and bacteriological study, have found the microbe in affected joints and in other metastatic conditions. The subject is therefore on a scientific basis and replete with numerous well attested cases and facts. Frauenthal⁴⁵ has written a valuable clinical essay which is important in its surgical bearings.

Markheim⁴⁶ has also published a notable paper, with statistical details, which can be read with profit.

In most cases cure is produced, but ankylosis, contracture and muscular atrophy are sometimes sequelæ.

Griffon⁴⁷ and L. Nathan-Larrier have noted the occurrence of bursitis with gonococcic arthritis. Heineke⁴⁸ reports the case of a gonorrheic man who had swelling of the bursa under the Achilles tendon. Jundell⁴⁹ and Ullman report⁵⁰ cases of tendovaginitis due to gonorrhea.

The study of gonorrheal arthritis in infants has been well developed by Detounis,⁵¹ who shows in over forty cases that infection develops from vulvovaginitis, purulent ophthalmia and urethritis. It sometimes occurs without a venereal origin. It is more common in girls than boys. Its symptomatology is largely that of the adult. It may simulate ordinary rheumatism and be accompanied by osteomyelitis, which is very difficult to diagnosticate.

In both adults and children gonorrheal arthritis may be accompanied by rheumatoid symptoms and by metastases to vital organs and to various tissues generally.

E. Jacobi and Solomann⁵² give a detailed account of a case of a thirty-seven-year-old man who had suppurative inflammation of the tendons of the internal malleolus and of the tibialis posticus, in which gonococci were found.

MYOSITIS.

Inflammation of muscles in all grades of severity, even to abscess formation, has been found to be caused by the toxins, and also by actual deposition of the gonococcus in the tissues.

The cases of Heller and Ware are of interest.

Harris and Haskell⁵³ report the case of a gonorrheic woman, aged thirty-four, who had an abscess under the erector spinæ on both sides, and also under the gastrocnemius and soleus muscles, both of which contained much pus. Gonococci were found microscopically and by culture.

In a thirty-nine year old gonococcic man Bujwid⁵⁴ observed muscular abscesses near joints of the arms and legs in which pure cultures of the gonococcus were demonstrated.

BONE LESIONS.

Much progress has been made in the study of gonococcic bone lesions.

It has been conclusively shown that such periostites and periostoses are not uncommon. These are:

1. Periostites with slight hyperplasia, which involve more or less osseous area, are not much elevated, may appear quickly

and rapidly disappear, and may become chronic. The usual sites are the continuity of long bones, particularly near joints, the phalanges of the metacarpal and metatarsal bones in continuity or at ends, the ribs, the clavicle, sternum, and the acromion process of the scapula.

2. Periostoses (superficial osteitis). These lesions are more developed than periostitis, more salient, and usually more extensive, like periostites. They are the seat of severe pain, and may be falsely regarded as syphilitic in origin. They are observed in the long bones of the extremities, on ribs near cartilages and clavicle and on the ilium and the sacrum.

Several illuminating communications have appeared as to the effects of gonorrhea upon the hands and feet, though the clinical description and differentiation of the complex morbid phenomena are not clearly made out. It appears that the following statement is warranted as to the bones of the feet: The joints of the small bones of the feet may be singly or in multiple form involved, in which case there is synovitis of varying grades, or there may be osteitis of one or more bones combined with the arthritis. If a cure is not induced, much structural change and deformity result, even caries or necrosis. In some cases the integrity of the ligaments and fascia is more or less impaired, and relaxation of the component bones is produced. This general résumé presents the essential facts as to the nature of gonorrheal flat-foot, the "*pied plat blennorrhagique*" of the French.⁵⁵⁻⁵⁶

It seems singular that this subject is not well understood by English and American authors, who talk vaguely about rheumatism, which is really a subsidiary symptom. There are many authors whose surgical vision would be much illuminated and expanded by clear knowledge of the activities and potentialities of the gonococcus.

It is worthy of note that Dr. C. H. Jaeger has published a series of cases in which exostosis of the os calcis has been observed, and in which the probable etiologic factor was the gonococcus.

Bone lesions have been well described by Kienbock⁵⁷ in cases of gonorrheal arthritis and his studies, aided by x-rays, throw much light on the intimate pathological changes observed in these structures; they are of much interest.

Finger,⁵⁸ Ghon and Schlagenhauser found in a gonococcic infant many disseminated lesions, and in a perichondritic costal abscess, they culturally demonstrated the Neisser microbe.

Cupler⁵⁹ reports an interesting case of gonorrheal osteomyelitis in which it is probable that the gonococcus was the causal agent.

In this connection it is important to remember in the matter of diagnosis that in many cases of osteomyelitis in children, the streptococcus, staphylococcus, pneumococcus and influenza bacillus have been shown to be the *materies morbi*.⁶⁰

Bouchard⁶¹ has described a form of chronic spinal arthropathy which may be mild or severe, which he says is the so-called "*spondylose rhizomelique*" of Marie. The condition attacks one segment of the spinal column, the lumbar, the dorsal, or the cervical. The symptoms are impairment of movement, even ankylosis, deformity of the spine, and sometimes the formation of osteophytes. Bouchard thinks that such cases are gonorrheal in origin, and that they may develop years after an acute attack when there is no evidence of the disease, but perhaps some old focus of chronic inflammation in the prostate or vesiculæ seminales.

One of the most satisfactory and recent cases is that of Cou-teaud⁶² of a twenty-four year old gonorrheic man who developed rheumatism, hyperostoses of the shafts of the femur and ulna with involvement of the knee, ankle and metatarso-phalangeal joints, together with atrophy of the muscles of the legs and feet. There was also osteitis of some of the tarsal and metatarsal bones, with some loss of the plantar arch.

Hamann⁶³ has reported several cases of gonorrheic involvement of the hip-joint in which both bony and fibrinous ankylosis was observed besides caries of the bone. They were of gonococcic origin.

EPIDIDYMIS AND TESTIS.

These structures are those most commonly affected by gonorrhea, and their pathogenesis is now clearly made out. In many cases they are the seat of toxin infection alone, and present a less marked symptomatology; in others they are attacked by true gonococcic invasion.

In several of my cases of epididymitis and orchitis I found gonococcic infection; in some there was an admixture of pus cocci. The following cases are recent and present points of interest.

In a case of gonorrhea complicated with epididymitis Witte⁶⁴ found in the pus of the incised abscess of the epididymitis

many gonococci which answered to Gramm's stain. There was an admixture of other microorganisms.

Pizzini⁶⁵ reports a case in which in the first weeks of gonorrhea a man had abscess of the epididymis, and in the inflamed organ myriads of gonococci were found. The infection of the testicle is local and direct from the morbid focus.

Recent experience shows that the pathogenic action of the gonococcus itself upon testicular suppuration is an evidence of the virulence of that microbe in that particular case.

PROSTATE AND SEMINAL VESICLES.

Since the studies of Finger (1893 and 1895) into the changes produced in the prostate by the gonococcus, there have been few papers of a scientific character, though many observers, in a desultory way, have sought to find this microbe in that organ and its secretions.

Notthaft's⁶⁶ observation of 120 cases of gonorrheal infection are the most conclusive. His results are as follows:

1. In the second half year after the infection there was 73 per cent. of the cases in which the gonococci could be proved to be present in the prostatic secretion. In the third half year this percentage fell to 50, in the fourth half year to 18, in the third year to 6. From the end of the third year no gonococci could be found in the prostatic secretion.

2. In the second half year there were other bacteria besides gonococci found in the prostatic secretion. In the fourth half year there were no cases in which a pure gonococcic infection could be demonstrated.

J. Bayard Clark⁶⁷ in a number of cases made cultures and his results are in accord with those of Notthaft in the matter of mixed infection, but in none of his cases were gonococci found by either the microscope or culture, yet in five cases out of the eight, considerably over 50 per cent., the infection was less than eighteen months old. In seven out of the eight cases there was a growth of *Staphylococcus albus*, and in two of these there was added a growth of *Bacillus xerosis*. In one case there was no growth.

The conclusions to be drawn are that there is difficulty in proving the presence of gonococci in these older cases of chronic gonorrheal prostatitis, and that other organisms play an active part in the bacteriology of this affection.

From their inaccessibility and owing to the difficulty of getting unmixed secretions from the seminal vesicles and their ampullæ, it has been very difficult to obtain histological material. The result has been that the bacteriology of these recesses has been sadly neglected. That they are infected by the gonococcus is amply proved by clinical facts. Walter Collan⁶⁸ claims that by certain procedures he has been able to ferret out this microbe in fifteen cases.

Belfield's contributions⁶⁹ to the study of the seminal vesicles are practical and valuable. He thinks that pus infection of the seminal tube, including the vesicle, quite as frequent as pus infection of the Fallopian tube in the female. It is, however, not so often recognized, for its usual symptoms, pyuria, frequent and painful urination, and partial or complete retention of urine, are usually referred to the bladder and prostate, and the patient therefore treated for cystitis and prostatitis. The infections of the seminal tubes are three—the gonococcus, pyogenic bacteria, and the tubercle bacillus. The pus infections of the seminal tube are extensions from the deep urethra; they result from (1) gonorrhea, (2) stricture, (3) prostatic concretions, and other causes of prostatic suppuration in middle aged and elderly men. Invasion of the seminal vesicle by the gonococcus induces the symptom complex usually considered indicative of prostatic abscess—frequent and painful urination, complete retention of urine terminated by a sudden discharge of pus, often an ounce or two, into the urethra. These phenomena are usually due to abscess formation in the seminal vesicles or in the utricle.

Belfield proposes an operation which he describes. It consists essentially in opening the vas, stitching the cut edges to the skin, and injecting through a curved hypodermic needle any chosen solution into the proximal vas; this liquid traverses the vas and ampulla and enters the seminal vesicle. By digital massage from the rectum, the injected liquid can be expressed into the urethra if desired. For injections through the vas the solutions commonly employed in the urethra are used; but the first injections should not exceed thirty to sixty minims, lest spermatic colic and retention of urine be provoked.

The nongonorrheal infections of the seminal tube in men over forty years of age are, like everything else causing bladder symptoms in these patients, called prostatic hypertrophy; and they complete retention of urine.

By means of Belfield's clever procedure it is probable that in future the bacteriology of these structures can be readily studied.

Seeing that the meningococcus seems to be taking its place as a probable cause of urethral suppuration, it is interesting to note that L. Pick ⁷⁰ believes he has established a relationship between contagious cerebrospinal meningitis and meningococcic or gonococcic inflammation of the seminal vesicles.

PERITONITIS IN THE MALE DUE TO GONORRHEA.

Owing to the propinquity or to contiguity of tissue, inflammation of the peritoneum has been caused in a few cases of gonococcic seminal vesiculitis.

Gonorrheal peritonitis may be developed by acute inflammation of the seminal vesicles. The infectious process then begins in the rectovesical cul-de-sac, where it may localize itself, or it may spread indefinitely from that morbid center.

Gonorrheal inflammation of the vas deferens or of a limited segment thereof may be the cause of peritonitis, owing to the fact that these anatomical structures are for a considerable distance in direct contact with each other.

It has been claimed that inflammations of the lumbar ganglia (which are situated immediately behind the peritoneum), due to the extension of the gonorrheal process, may also be the cause of peritonitis from contiguity.

During the course of gonorrhea a limited portion of the vas deferens may become swollen and painful and cause fear of peritoneal involvement. In these cases, however, the deep pelvic or iliac pain usually ceases when the epididymis becomes swollen, as it generally does. In the majority of reported cases epididymitis and peritonitis had existed at the same time. Consequently, the testicular inflammation may often be an important diagnostic guide.

Patients attacked by gonorrheal peritonitis commonly complain of colic at first, and soon direct attention to the tenderness in one of the iliac fossæ or of the groin. With the extension of the process the whole hypogastrium may become swollen and tender, and from that the whole abdominal cavity may be attacked.

Wendelin observed a case in which there was much swelling of the vas deferens, together with peritonitis, which ran such a severe course that perforation of the bladder and rectum occurred, and death followed.

Faucon related a case of epididymitis in which there were severe general symptoms, together with a swelling at the internal abdominal ring which extended to the spine of the ilium. It was regarded as a subperitoneal phlegmon, and was incised, but no pus was let out. Recovery took place.

Peter reported a fatal case, with the postmortem findings, of a boy sixteen years old who had gonorrhea and epididymitis. He was attacked by the usual symptoms of acute peritonitis, which eventuated in death. At the autopsy diaphragmatic pleurisy, general peritonitis, and engorgement of the liver and spleen, were found. The urethra was red in its anterior part, pale in the posterior. The right seminal vesicle was healthy, but the left was swollen and contained pus. The surrounding cellular tissue was red and swollen, and the peritoneum in contiguity with it was markedly hyperemic. The left vas deferens was swollen and in intimate contact with the peritoneum which surrounded it. The infection of the peritoneum resulted from seminal vesiculitis and deferentitis.

CYSTITIS, PYELONEPHRITIS, PYONEPHROSIS AND ABSCESS OF KIDNEY.

In most cases of acute and subacute cystitis the *materies morbi* seems to be the bacterium coli commune, the streptococcus pyogenes and the proteus of Hauser.

Gonorrheal cystitis is in most cases a mixed infection in which the gonococcus plays a very insignificant part, being engulfed generally by the more potential microbes.

In a limited number of cases Melchior, Wertheim, Lindholm and Young demonstrated the gonococcus in the bladder in acute cases of gonorrhea. In such cases, however, gonococci dominate the microscopic field only for a short time; then they are replaced by the microbes already mentioned.

Young⁷¹ also found (strange to say) pure cultures of this organism in some cases of cystitis of five years' standing. Young also demonstrated the fact that in his case of chronic gonococcic cystitis, by extension of the morbid process, double pyonephrosis was produced.

It is interesting to note that Bransford Lewis has presented a postmortem specimen of pyonephritis in a man fifty-four years old. He thus summarizes his findings: "A specimen of pus taken from the kidney was examined microscopically and subjected to culture experiments. Under the microscope diplococci

were observed within the pus cells and they responded, as do gonococci, to the Gram test, being freed from stain by washing. Inoculations were made into sterilized media (urine agar) and pure cultures of the same diplococci were the result; and these responded to the Gram test."⁷²

It has long been known that in severe cases of posterior urethritis albumen may appear in the urine, and that it may be due to spasmodic contraction of the orifices of the ureters by the detrusor muscles of the bladder which dams back the urine and leads to the escape of albumen from the glomeruli into the renal tubules. On the other hand, Balzer and Souplet think that it is due to systemic infection by the gonococcus. The studies of Bazy and Albarren have convinced them that the infection of the kidney in gonorrhea occurs by means of the blood-vessels, and this view is accepted by Tédénat and Le Für. These authors⁷³ report two cases; the first (Tédénat's), of perinephritis with abscesses of the cortex and pus in the calyces, necessitated removal, the tumor being 15 centimeters long and 9 broad, and weighing 226 grams; the second, Le Für's, was a case of pyonephrosis, the tumor being the size of an adult head, which was also removed. The pus in both cases was said to have contained many gonococci and some coli bacilli and staphylococci.

Sellei and Unterberg⁷⁴ think it is a matter of the greatest difficulty to determine whether or not a pyelitis can be produced by the gonococcus alone. The requisite information can be obtained only by ureteral catheterization, but there is always a possible source of error through the contamination that is likely to occur during the passage of the instrument through the urethra and bladder. By taking especial precautions in observations on five patients the authors reached the conclusion that the gonococcus alone is sufficient to produce pyelitis, although in most cases mixed infections are present. The process appears to be the result of direct ascension and not of hematogenous transmission. The affection is usually unilateral and the symptomatology is not characteristic, so that the diagnosis can be made with certainty only with the ureteral catheter. The temperature is considerably elevated only during the most acute stages; later on there are only slight intermittent elevations. In some cases fever and pain are entirely absent. The polyuria and pyuria appear to be constant, however, but these symptoms are also common to other forms of

pyelitis. In most cases the process may be cured by rest and internal medication. Where these measures are ineffectual lavage of the renal pelvis is indicated. For this purpose boracic acid solution and 1 per cent. silver nitrate solution may be used.

In the study of cognate cases great care should be taken in establishing the clinical history, and the bacteriological examination should be very thorough. It is well to be skeptical as to the existence of the gonococcus until it is clearly proved to be present.

INFECTION OF THE EXTERNAL AND INTERNAL GENITALS IN WOMEN.

There is no longer any doubt of the invasion of the lower and upper parts of the genital tract of women by the gonococcus; such a condition has been very many times scientifically proved. Gonococcic inflammation of the urethra, vagina, vulva, vulvovagina of young girls, of the periurethral and paraurethral follicles and glands has long been thoroughly recognized. By extension upwards, the os uteri and uterus may become involved and from these foci the ascending infection, chiefly by continuity of tissue (perhaps by vessel and lymphatic metastases), may attack the Fallopian tubes, the ovaries and their adnexa, and from these parts may invade the peritoneum. Intrapelvic invasion is always a very serious condition, fraught with suffering, danger, invalidism and often disaster.

In general, however, the disease localizes itself in the lower pudendal zone; there may run an acute course, may become chronic or may be cured.

The bibliography of the lower or pudendal cases is so rich that it would fill a goodly sized pamphlet.

Gonococcic infection of the os uteri and uterus, though tolerably accessible, often presents rebellious conditions difficult to treat.

The invasion of parts further up the pelvis frequently presents formidable conditions.

FALLOPIAN TUBES.

There is no longer any doubt as to the ascending invasion of the gonococcus to the Fallopian tubes. First clearly pointed out by Westermarck⁷⁵ and Orthmann,⁷⁶ the magisterial essays of Wertheim⁷⁷ placed this subject on a scientific basis. The latter observer demonstrated the penetration of the microbe through the mucous membrane into the muscular layer, from which it invaded the peritoneum. From this focus he obtained pus,

discovered the gonococcus, cultivated it, and from such cultures successfully inoculated the urethræ of several idiots and paralytics.

Though the proof of the existence of the gonococcus in infected tubes is absolute in some older cases, this microorganism may not be found. Menge⁷⁸ in twenty-six cases of tubal disease found the streptococcus pyogenes twice, the streptococcus albus once, and thinks he found the gonococcus once. Many observers think that in these locations the latter microbe has less vitality than some other microorganisms.

OVARIES.

Luther has demonstrated the invasion of the gonococcus into all the periuterine tissues and into the ovary.⁷⁹ Wertheim in three cases found the gonococcus in ovarian pus cysts.

PERITONEUM.

Fully one hundred cases have been published in which infection of the female peritoneum by the gonococcus has been observed. In many instances the bacteriology of these cases has been wanting or inconclusive, but in a goodly number the microbe has been demonstrated by the microscope and by culture; the subject is thus placed beyond doubt.

In 1895, L. Frank⁸⁰ published what may be considered the first case of gonococcal peritonitis, with bacteriological proof, as such reported in this country. He had operated upon a prostitute seventeen years of age for acute pyosalpinx. During the operation the right tube had ruptured and soiled the peritoneum. In spite of the employment of irrigation and drainage, she developed a septic peritonitis within twenty-four hours, and died two days later. Cultures taken from the peritoneal cavity during the autopsy showed only gonococci.

In an illuminating paper H. W. Cushing⁸¹ detailed two cases in gonorrheic women after menstruation, in which he found the gonococcus by the microscope and demonstrated it by cultures.

In seven cases of acute generalized peritonitis in women Hunner and Harris found and cultivated this microbe.⁸²

Comby and Gadaud⁸³ report three cases of gonococcic peritonitis in children six and twelve years old following vulvovaginitis. In two cases the vulvar inflammation was chronic and the recognition of the gonococcus was not clearly made out; in the third and recent case the microbe was positively recognized.

C. Goodman operated on a seven and one-half year old girl

who had a vaginal discharge and in a few days became ill with general peritonitis. Gonococci were found microscopically in the vaginal discharge and in the peritoneal exudates, and cultures from both revealed that microbe.⁸⁴

It is interesting to note that in some cases of extrusion of gonococcic secretions from the tubes into the peritoneum by effort of nature the infecting material has been encapsulated and walled off, and generalized infection has not followed.

In very many chronic cases of gonorrhea of the uro-genital tract it is difficult or impossible to find the gonococcus as it has been snuffed out by other microbes.

EXTRAGENITAL INFECTION OF THE MOUTH, RECTUM, NARES, UMBILICUS AND EYES.

Gonorrhea of the mouth has been observed several times in persons given to beastly practices. In all cases the clinical history has been strikingly perfect, but in most there was absence of a clean-cut account of the discovery of the gonococcus. Cutler's case, really the most striking, was that of a woman who, having had oral coitus with a gonorrheic sailor, in two days had severe stomatitis with much ulceration. Large numbers of bacteria were found in the secretions, purulent and fibrinous, and a microbe which seemed to be the gonococcus was discovered.

The latest case, that of Jurgens,⁸⁵ was that of a man suffering from gonorrhea in whom developed, upon the gums and inside the cheeks, a severe diffuse inflammation. It was characterized by a dirty gray deposit which could be easily removed and which had a pronounced tendency to bleed. It required seven weeks to bring about a cure. Bacteriological examination showed spirochetæ and fusiform bacilli, and a diplococcus on culture, which had all the biological properties of the gonococcus.

The older cases of Hölder Rosinski and Leyden are interesting as cumulative evidence.

Rectum.—There is a rich literature concerning gonorrhea of the rectum, in which its clinical history is fully portrayed. Observations by Horand, Bumm, Neisser, Staub, Neuburger and Borzecki have conclusively demonstrated the gonococcus in several cases of suppurating proctitis. Gonorrhea of the rectum is commonly the result of sodomy and bestial practices, and has been observed in men and women and children of both sexes.

Winslow⁸⁶ reports an epidemic of gonorrhea in a Baltimore institution for boys from nine to twenty-one years old, which originated in the following manner: A boy who was on leave of absence contracted gonorrhea from a girl, and was suffering from it on his return to his duties. Before he was cured he had anal coitus with another boy, who from it became infected. From this boy with rectal gonorrhea many other boys contracted the disease. Ten such cases are recorded, and it is stated that it was probable that there were other cases which were not reported.

The most satisfactory case is that of Frisch.⁸⁷ It was of a girl seventeen years old who, fifteen days after unnatural intercourse, complained of burning pain in the rectum, particularly during defecation. The perianal region was reddened and excoriated, and from the anus, narrowed by inflammation, a thick greenish-yellow pus escaped. In this secretion and in that from the genitals myriads of gonococci were found.

Tuttle⁸⁸ reports two cases of rectal gonorrhea in men and one in a woman due to sodomy, in the secretions of all of which gonococci were found.

Cases of women suffering from rectal gonorrhea in which the gonococcus has been found are among those reported by Neisser and Bumm. Cases of autoinfection with rectal gonorrhea have also been reported. Rollet⁸⁹ reports the case of a man suffering from gonorrhea who was also affected with constipation. It was his custom to aid defecation by introducing his finger into the rectum. By this maneuver his finger, being soiled with pus from his urethra, infected his rectum.

From a consideration of all cases, particularly those of Hartmann and Griffon, Marcel Sée⁹⁰ says that the existence of a gonococcic inflammation of the anus and of the rectum has been absolutely demonstrated.

Nose.—While it is probable that should gonococci be deposited on the nasal mucosa infection might occur, no authentic case is on record of such an event. The recitals of the cases of putative nasal gonorrhea are really farcical. Cozzolino believes in them and mentions Edward's case, in which a woman was said to have been infected in the nose by the handkerchief of her gonorrheic son, and that of Sigmund of a man who was thus infected as a result of introducing into his nose the labum majus of a prostitute!

Ziem thinks that purulent rhinitis of new-born children is

often a gonococcic manifestation derived at birth from an infected mother. He further thinks that nasal gonorrhea may be of metastatic origin.

Umbilicus.—Hocksinger⁹¹ has seen arthritis develop in a new-born child as a result of an erosion of the umbilicus, and he and Epstein venture the query, Is there a gonorrhea of the umbilicus? Authoritative observations are in order.

OPHTHALMIA, IRITIS OR IRITES AND IRIDO-CYCLITIS.

It is to-day almost a platitude to assert that the gonococcus causes virulent suppuration in the eyes as it does in the urethra, male and female. This eye-infection was really the first and strongest scientific evidence produced in support of Neisser's original claim that the gonococcus was the morbid agent in gonorrhea. When we cite the essays of Haab, Krause, Kroner, Leopold and Wessels and Zweifel in the early eighties, in which they demonstrated in many cases by observation and confrontation that the eye-infection of many children was caused by gonococci-containing pus which was present in the genital tract of the mothers, and that the accidental and experimental infection of the eyes by gonorrheic discharges promptly caused the same result, we state the whole case and further elaboration is unnecessary.

It is a matter of history that in a small epidemic of purulent vulvovaginitis in the young girls of a boarding school gonococcic ophthalmia was developed in a large number.

Many cases have been observed in men and women in which gonorrhea of the eyes was due to the transference of pus from their infected genitals.

Sero-vascular conjunctivitis is now a well-recognized condition and it, together with iritis and irido-cyclitis, has in many cases been demonstrated to be the remote results of gonococcic infection. These affections are probably due to hematogenous infection.

SERUM THERAPY.

Analogical evidence certainly points to the utility of serum therapy in many instances of gonococcic infection. The subject is still in an experimental state, but the methods of procedure and the progress thus far obtained are worthy of description. According to my reading the subject was first developed by Moskaleff⁹³ in 1904 and 1905. This observer details the results of a series of researches on animals by inoculation of the gonococcus, and of making a protective serum

against this germ. He thinks that the best media for the growth of the gonococcus are those of Wassermann, Wertheim, and Kiefer, the last being most conveniently prepared and containing pleuritic exudate mixed with agar-agar and glycerine. Gonococci proved pathogenic in rabbits when injected subcutaneously or into the peritoneum. These germs were also pathogenic in white mice, producing fatal infections when injected into the peritoneum. White mice are probably the most convenient animals for experimenting on the pathogenic action of the germ. The action of the gonococcus on the various tissues of the body depends upon the activity of the gonococotoxin. The latter acts chemiotactically, and produces a sterile suppuration in some tissues, while in others it acts on the vessels, and cytolytically on the cells, and produces transparent exudates. (This is the case in the peritoneum.) Serum of rabbits rendered immune by the inoculation of gonococci proved to a certain extent a curative and preventive agent.

Bruck has also investigated the subject of immunity against the gonococcus. His studies⁹³ show at the same time that even the finest biological methods at hand as yet present no ground for the expectation that a common gonorrhœic infection of the human subject can bring about the production of immune bodies. This conclusion has been separately arrived at by clinical findings in uncomplicated gonorrhea. But in prolonged and severe or acute general infection antibodies may appear in the blood.

Antibodies obtained by Bruck have been named by him "amboceptons," and have not thus far been separated from gonococcus-immune serum. Our knowledge concerning the antibodies thus obtained is that they show the presence of agglutinins at the moment of immunization.

The formation of these agglutinins is fully separated from that of specific antibodies. The entire processes may be outlined as follows: If rabbits are immunized by living cultures of gonococci, a serum is obtained which possesses marked agglutinative power, but is weak in amboceptonic strength. If, however, for immunizing one uses an aqueous gonococcus extract (artificial *aggressins* of Wassermann and Citron), there appears not a trace of agglutinins, while we find a high percentage in amboceptons towards gonococci.

On this interesting subject all available facts should be recorded.⁹⁴ Vannod describes the manner in which he was able

to obtain a specific agglutinating serum from rabbits that had been treated with an extract of gonococcus cultures. For this purpose the bacteria were treated with potassium hydrate and a precipitate was obtained by the addition of acetic acid. This precipitate when dried formed a powder soluble in sodium solution, and it was this material that was used to inject into the rabbits. In this way a serum was obtained which was strongly agglutinating, both macroscopically and microscopically, for gonococci, but not for staphylococci, or typhoid bacilli. Meningococci, on the other hand, were agglutinated by the serum, and meningococcus serum was found to agglutinate gonococci. The author also describes the steps by which he was enabled to prove the existence in the gonococcus serum of specific amboceptors, but that the serum did not contain amboceptors specific for meningococci, and that therefore the demonstration of the specific amboceptors, rather than agglutinative power, affords the best differential diagnostic method.

In America Torrey and Rogers⁹⁵ have published important communications on the development and use of antigonococcic sera. They give a report of results in the treatment of gonorrheal rheumatism with an antigonococcus serum made by the inoculation of large rabbits with cultures from an acute, untreated case of gonorrhea. The best sera were obtained by inoculations at intervals of five or six days with cultures from six to fifteen days old. The rabbits were always inoculated intraperitoneally. While they think that the most important factor in the good results obtained with the serum is its bactericidal action, they are inclined to believe that there is also an antitoxic action. Experiments with guinea-pigs seemed to indicate this, and clinical evidence also supported the view. In some of the cases of gonorrheal rheumatism treated with the serum there was a decrease of pain in the joints within twenty-four hours after the first administration, and this seems most reasonably explained by a neutralization of some of the gonotoxin. Mainly, however, the serum acts, in their opinion, by destroying the bacteria. It seems possible, they say, that it supplies enough immune bodies to dispose of the comparatively few gonococci in the chronic forms of the disease, though not enough to bring about the destruction of the great number of gonococci that are present in the urethra in acute gonorrhea. Experimental evidence fully to substantiate this theory is yet lacking. The serum, however, has been found to contain both

precipitins and agglutinins for the gonococcus. They state that the strains of the gonococcus which have been used in producing this serum were selected because, after an extended series of experiments, they gave evidence of being distinct varieties as far as agglutination was concerned. Such a selection of varieties is a long and tedious process, but is essential for the best results. Some strains are much more toxic than others, and obviously the less toxic ones should be used in the first inoculations. If no attempt is to be made to produce a polyvalent serum a strain should be used which raises agglutinins readily and is decidedly toxic. A few experiments will show that there is a great difference in these respects between various cultures of the gonococcus.

Method of Use.—This serum has been found to be efficacious in the treatment of some of the complications from the primary gonorrheal infection. Acute urethritis, vaginitis and conjunctivitis are not markedly benefited by the serum, and for the treatment of these infections it is necessary to resort to other agents. A probable explanation of this peculiarity may lie in the fact that many of the infecting microorganisms are not reached by the serum circulating in the blood and lymph. However this may be, acute urethritis should be allayed by the usual methods in order to obviate the possibility of a subsequent relapse.

The complications which are amenable to serum treatment may be conveniently grouped according to their mode of origin in two classes: (1) Those arising by direct extension of the primary infection into organs like the prostate, epididymis, testicle, bladder and Fallopian tubes, in direct continuity with the primary focus; (2) those due to the entrance of the microorganism into the circulation, either directly or through the lymphatics. These lesions include arthritis, iritis and the rarer endocarditis, pleuritis and meningitis. Gonorrheal peritonitis may generally be more correctly placed in the first group.

My studies lead me to think that to be of benefit these sera should be used in the quite active and nascent conditions of gonorrhea, when the gonococci may be acted upon. Observations have convinced me that these agents are impotent and even inert when used in chronic cases in which the activity of the gonococcus is impaired or destroyed.

It is interesting to note that Dr. G. K. Swinburne⁹⁶ in a severe case of gonorrheal epididymitis and rheumatism ob-

tained a surprisingly prompt and favorable result from the use of Torrey and Rogers' serum.

The accumulated knowledge herein presented shows that the gonococcus is one of the most formidable microbes met with in pathology and takes a high place with those of syphilis and tuberculosis.

A summary of its activities is presented in the following propositions:

1. It attacks the human urethra and there gives rise to both a catarrhal and hyperplastic inflammation from which may follow chronic urethritis and a tendency to stricture.

2. By contiguity of tissue it invades the testes and their appendages and thus threatens sterility in men.

3. Limited in its effects as a rule to the subepithelial connective-tissue layer it in some cases by further invasion gains a foothold in the venous and lymphatic radicles of the male and female genitalia and produces local and general disturbances.

4. By this extension the whole organism may be more or less seriously attacked and local disorder, much suffering and disability may result.

5. The gonococcus then becomes a true factor of septicemia and serious and even mortal illness are to be feared.

6. Arthritis and rheumatism are the most constant concomitants of gonorrheal invasion and induce marked changes in the joints, the tendons, the bursæ and the muscles.

7. Generalized systemic infection is most commonly observed when by extension (usually from the joints) the heart in part or in whole is attacked; then severe and perhaps mortal illness may be produced. In general the reaction is in proportion to the extent of cardiac territory attacked and such cases may assume a malignant form.

8. Such is the antitoxic power inherent in the blood serum that in very many cases, even when vital parts are attacked, the gonococcus is destroyed.

9. By reason of its toxins or perhaps of the microbe itself more or less structural change is produced in the cerebro-spinal system which may be local or more or less generalized.

10. Gonococcic invasion of the pleura is not uncommon and various forms of phlebitis may thus result.

11. While it has been shown that the spleen may be attacked there has been no evidence of liver involvement described.

12. A large range of cutaneous and mucous membrane lesions

have their origin in the gonococcus. These are ulcers, abscesses, and follicular lesions, erythematous and keratotic exanthems.

13. Bone lesions of mild and severe forms are more or less remotely dependent on the virulent potentialities of the gonococcus.

14. The whole genito-urinary tract in the male may be involved by the gonococcus; the prostate, seminal vesicles, bladder, ureters and kidney may be attacked.

15. Certain extra-genital parts, such as the mouth, rectum, nares, umbilicus and eyes are frequently the seat of gonococcic inflammation.

16. Infection of the female genito-urinary tract is very common. When the lower pudendal portions are involved there is less danger but extension of the process to the uterus and parts above constitute menaces to health and life.

17. The question as to whether an inhibitory serum may be produced to kill or jugulate the virulent microbe is as yet unsettled.

18. In the vast majority of all cases of gonorrhea the gonococcus is at first the absolute causal agent. The few cases in which a condition resembling gonococcic urethritis is produced by other microbes constitute but a drop in the bucket.

19. While the gonococcus may become latent and may hibernate in tissues, crypts and follicles, it may at any time become potential. It also may lead to mixed infection and prepare the soil for other microbes which may run a severe course.

20. The gonococcus thus shows itself capable of producing the most far-reaching infections to which the human race is liable.

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and gonorrhea in the causation of flat-foot must be kept in mind. Tuberculosis alone may be the pathogenic cause. Ewald (*Münchener Medizinische Wochenschrift*, November 19, 1907), reports four cases in which tuberculous disease of the small bones of the foot was diagnosticated by x-ray examination. It is the part of wisdom to keep these facts in mind.

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⁵⁹ *Annals of Surgery*, January, 1907.

⁶⁰ As german to this whole subject the recent case (*Lancet*, Sept. 27, 1907) of Dudgeon and Adams is very illuminating, the patient being a girl baby of ten months. The bacteriological tests showed the influenza bacillus in the various joints affected. The primary lesion seems to have been epiphysitis of the upper extremity of the radius. There was no evidence of any sore or wound on the limbs, as sometimes met with in cases of acute epiphysitis and osteomyelitis due to the staphylococcus aureus. There was no history obtainable of any influenzal affection in any other member of the family, and apart from the fact that the child was not thriving for one month before the onset of this disease her condition caused no anxiety. When first seen the case appeared obscure and examination by x-rays failed to throw further light on the exact lesion. This was doubtless due to the absence of ossification in the epiphysis and the very small amount of destruction of bone at the time this examination was made. At the postmortem examination, however, there was irregular pitting at the upper end of the radial shaft.

⁶¹ *Zeitschrift für klinische Medizin*, LXII, 1907.

⁶² "Hyperostose Blennorrhagique du Membre inferieur," *Gazette des Hôpitaux*, September 29, 1904.

⁶³ "Ankylosis and caries following gonorrheal infection," *Cleveland Medical Journal*, March, 1904, pp. 117 et seq.

⁶⁴ "Zur pathogenese de gonorrhöischen epididymitis," *Archiv. für Derm. und Syphilis*, Vol. 50, p. 89, 1899.

⁶⁵ "Un Caso di Epididimite blennorrhagica suppurativa con alcune considerazione sulla Virulence del gonococchi," *Giornale Ital. della Malattie Veneree e delle Pelle*, 1900, p. 392, 4th part.

⁶⁶ "Die Chronische Gonorrhoe der Männlichen, Harnröhre," Oberländer and Kollmann, Leipzig, 1905, Vol. III, p. 137.

⁶⁷ "Gonorrheal Prostatitis," *Journal of the American Medical Association*, April 11, 1907.

⁶⁸ "Ueber Spermatocystitis gonorrhöicen" (brochure), Hamburg and Leipsig, 1898.

⁶⁹ "Irrigation and Drainage of the Seminal Duct and Vesicles Through the Vas Deferens," *Transactions of the American Association of Genito-Urinary Surgeons*, Vol. I, pp. 63 et seq., 1906.

⁷⁰ *Berliner klinische Wochenschrift*, August 5, 1907.

⁷¹ "The Gonococcus," etc., *Journal of Cutaneous and Genito-Urinary Diseases*, June, 1900, pp. 241, et seq.

⁷²"On the Pathology of Gonorrheal Pyelonephritis," etc., *Journal of Cutaneous and Genito-Urinary Diseases*, Vol. 18, 1900, pp. 396 et seq.; also Gerster, N. Y., *medizinische Monatschrift*, April, 1897, and Cumston, *University Medical Magazine*, June, 1899.

⁷³"Abcès du Rein a gonococque," *Annales des Maladies des organes Genito-Uriinaires*, August 15, 1907, pp. 1214 et seq.

⁷⁴*Berliner klinische Wochenschrift*, No. 35, Sept. 2, 1907.

⁷⁵*Centralblatt für Gynaekologie*, p. 157, No. 10, 1886.

⁷⁶*Berliner klinische Wochenschrift*, 1887, p. 236.

⁷⁷"Die ascendirende Gonorrhoea beim Weibe, etc.," *Archiv. für Gynaekologie*, 1892, Vol. 42, pp. 1-86, and "Zur Lehre der Gonorrhoe," *Verhandlungen der Deutsch. Gesellschaft für Gynaekologie*, Leipzig, 1892, IV., pp. 340 et seq.

⁷⁸"Ueber die gonorrhoeische Erkrankung der Tuben und des Bauchfells," *Zeitsch. für Geburtsch und Gynaekologie*, 1891, Vol. 21, pp. 119 et seq.

⁷⁹Sammlung: *Klinische Vorträge*, Leipsig, 1893, p. 789.

⁸⁰*Medical News*, October 19, 1895.

⁸¹"Acute Diffuse Gonococcus Peritonitis," *Bull. of the Johns Hopkins Hospital*, May, 1899, p. 74.

⁸²*Bulletin of the Johns Hopkins Hospital*, May, 1899, p. 75.

⁸³Peritonites gonococciques des Petites Filles," *Societe medical des Hôpitaux de Paris*, May 24, 1901.

⁸⁴Acute Diffuse Gonorrheal Peritonitis," *Annals of Surgery*, July, 1897.

⁸⁵*Berliner klinische Wochenschrift*, June 13, 1904.

⁸⁶"Report of an Epidemic of Gonorrhoea Contracted from Rectal Coition," *Medical News*, Aug. 14, 1886.

⁸⁷"Ueber gonorrhoea rectalis," *Verhandl. der Phys.-med. Gesellsch. zu Würzburg*, 1891-92, N. R., pp. 167 et seq.

⁸⁸"Gonorrhoea of the Rectum," *N. Y. Med. Journal*, April 3, 1892, p. 379.

⁸⁹*Dictionnaire encyclop. des Sciences med.*, art. "Anus (Maladies veneriennes de l'Anus)," 1870, p. 495.

⁹⁰Le Gonococque. Brochure, Paris, 1896, p. 168.

⁹¹*Transactions of the Vienna Dermatological Society*, Nov. 6, 1893.

⁹²*Rousky Vrach*, March 5, 1905.

⁹³Ueber Spezifische Immun körper gegen Gonococcen, *Deut. medicin. Wochenschrift*, No. 34, 1906, and

Wassermann and Bruck: *Medizinische Klinik*, No. 56, 1905, and *Deut. medicin. Wochenschrift*, No. 12, 1906.

⁹⁴*Deutsche medizinische Wochenschrift*, Dec. 6 and 13, 1906.

⁹⁵"The Treatment of Gonorrheal Infections by a Specific Antiserum," *Journal Am. Medical Association*, Sept. 14, 1907.

⁹⁶*Transactions of the American Association of Genito-Urinary Surgeons*, Vol. I, 1906, pp. 31 et seq.

THE TREATMENT OF TERMINATED ECTOPIC PREGNANCY. REPORT OF CASES, INCLUDING ONE OF RECURRENT ECTOPIC GESTATION.*

BY

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(With Plate and One Illustration.)

THE treatment of terminated ectopic pregnancy is of serious importance owing to the frequency of its occurrence; because of the high operative mortality and on account of the almost universal teaching that immediate operation in these cases is imperative, which teaching I believe to be based upon a fallacy, and to be exceedingly dangerous.

The relative frequency of ectopic gestation is placed as high as 1 per cent. of all pregnancies, and is given by Hirst as 1 in 500. An average taken from the reports of ten hospitals totals 7 per cent. of all laparotomies, and I believe 5 per cent. would be a conservative estimate.

It is difficult to arrive at a fair estimate of the operative mortality. In 2,115 cases reported by thirty-nine observers, 10 per cent. died. It is no doubt the fact that many of these cases were in a condition which should give a mortality as low as that in the simplest abdominal section. Noble, who separates his cases, reports 42 per cent. as his mortality in immediate operation for tubal rupture. His mortality in all cases was 11 per cent.

It seems contrary to the surgical instinct to permit hemorrhage to be checked except by the classical method of ligation.

Ashton, under the heading "At the Time of Rupture or Abortion" says that "the indication is to operate in every case without unnecessary delay, whether the tube has ruptured into the peritoneal cavity or between the broad ligaments. We must not wait for reaction from collapse or shock to set in before operation, as the patient may perish in the meantime from loss of blood."

* Read before the Penna. State Medical Society at Reading, Pa., Sept. 26, 1907.

Montgomery regards the primary rupture as the most frequent indication for operation in these cases, the object being to check hemorrhage.

Werder advises immediate operation when the patient is found bleeding into the abdomen, but regards it as a perplexing question for the surgeon to decide whether or not to operate in those cases where the bleeding seems to be at least temporarily checked and the patient shows evidence of reviving from the shock and anemia.

Reed believes that in the large proportion of ectopic pregnancies fatal collapse from pain and hemorrhage will supervene within a few hours. He states further that "when rupture occurs, especially with extensive lesions directly into the general peritoneum, immediate operation is a necessity to save life."

Webster states that "when rupture is accompanied with acute symptoms of loss of blood, abdominal section is indicated."

Hirst regards operation as soon as the diagnosis is made, whether or not the sac has ruptured, as the "only treatment worthy of consideration" and makes the broad statement that "after rupture, the patient's only hope lies in an immediate abdominal section."

As to the details of operation, haste is considered the essential feature. Prominent authorities have warned against taking too much time for the preparation of the patient. Some believe in leaving all the blood in the abdomen; others prefer to remove a part, while still others are of the opinion that its entire removal insures better results.

It may be inferred then, that the great army of medical students leave colleges imbued with the idea that ruptured ectopic pregnancy should be treated as a surgical emergency; that the most available surgeon is to be selected without reference to his especial fitness; that preparation for laparotomy may be made with more regard to haste than nicety; and that the omission of many of the details of operation, so essential to the success of intraperitoneal work is justifiable.

Many pleas have been made for the early recognition of ruptured ectopic pregnancy, but I firmly believe that delay in diagnosis has been the means of saving many lives. The physician finds his patient in a condition of collapse and shock. For one reason or another sufficient time usually elapses before her admission to the hospital for reaction to have occurred; active bleeding is checked; the patient is in good or bad condition for opera-

tion according to the amount of anemia present, and according to the chance of infection of which I will speak later.

My first case of ectopic pregnancy was in 1895. In this case the patient was kept in bed for a month, at which time it was deemed safe to turn out the clot through a vaginal incision. Until 1905, I had operated upon eight cases with one death, and it was this experience and the observation of the experience of others, which determined me to carry out the line of treatment which I have adopted for the past three years.

In none of these cases was the diagnosis made before entering the hospital; every case gave a typical history of a sufficiently grave onset to have justified an enterprising physician in performing an immediate operation; after admission to the hospital, each case was treated expectantly and resolved itself into a simple laparotomy. The fatal case was thought to be unruptured before operation, but was found to be a beginning tubal abortion with hemorrhage from the fimbriated extremity. She died of sepsis and I do not believe the infection was introduced at the operation.

I do not include these cases in my report to-day for the reason that on account of meager facilities previous to 1905, the specimens were not submitted to a pathologist for confirmation of diagnosis.

In my observation of the experience of others, I have seen death as I have also seen recovery follow immediate operation. I have seen cases in which several days were permitted to elapse after rupture; in which reaction from shock had taken place, in which bleeding had evidently ceased. At operation, disturbance of the clot brought about a hemorrhage which, added to the shock of a laparotomy upon an already weakened patient, was sufficient to cause death. After tubal rupture, I have seen recurrent hemorrhage of a tragic type, which I believe to have been brought about by the manipulations of the attending physician. No case of fatal hemorrhage has come under my observation.

That fatal collapse from hemorrhage and shock following the rupture of a pregnant tube does sometimes occur is undoubtedly the case. Formad reported 1 per cent. in 3,500 general autopsies, and it is probable that an occasional sudden death is due to this cause; once in a while a case is so reported. But do they actually bleed to death? The shock and collapse occur almost simultaneously with the rupture, before there is time for a great deal

of hemorrhage and the symptoms are usually out of all proportion in gravity to the amount of blood lost. Shall we operate at this time? No one will deny that it is a most grewsome time to open the abdomen. Surgeons will agree that it is difficult to conceive of a more unfavorable condition under which to enter the peritoneal cavity than already existing profound shock and hemorrhage. Granting that it is possible to carry out a rigid asepsis in spite of the haste and difficulties with which these operations are performed, and that the retained blood as a culture medium for organisms introduced at time of operation is not a menace, there is one point which I believe is not considered seriously enough, and that is the risk of infection from the tube itself. It is generally conceded that salpingitis is the most important factor in the etiology of ectopic pregnancy. I have several times noticed marked symptoms of infection and localized peritonitis within twenty-four to forty-eight hours after rupture, and it is not remarkable that many cases which survive the shock of operation succumb later to sepsis. In thirty-four fatal operations in which the cause of death was given, sepsis occurred fourteen times.

In the face of such dangers, in how many cases would it be justifiable to operate? It has been determined that about 75 per cent. of all cases of ectopic pregnancy terminate in tubal abortion. The product of conception is expelled from the fimbriated extremity of the tube; the bleeding is not usually great and the entire mass is quickly walled off by adhesions. There could certainly be no objection to delay in these cases. Of the other 25 per cent., a certain number rupture into the broad ligament, which is the safest of all terminations. The balance, probably not more than 20 per cent. rupture squarely into the peritoneal cavity. It is not a much greater percentage than the present mortality rate. It is for the sake of these cases that immediate operation is advocated. But there is a growing skepticism to the belief that a fatal termination in this contingency is inevitable or even probable, or that the patient's greatest hope lies in immediate laparotomy. Neugebauer had one death in 135 cases treated expectantly, and says "every surgeon ties a bleeding vessel at once. Should there be an exception to this rule in gynecology?" In this connection it may not be out of the way to remark that in the field of general surgery, it is possible that exceptions to this rule may be made with advantage.

Edward Ihm had published statistics as to the mortality when

the expectant plan of treatment is employed, and gives Winkel's death rate as *nil*; that of Winter as *nil*; and that of Thorn as 1 per cent. Hunter Robb in a recent article advocating an expectant plan of treatment reports twenty cases with one death.

In addition to about twenty cases of my own, I have had the opportunity to observe at least as many more in the hands of other physicians and in the event of rupture or abortion, the invariable rule has been for the hemorrhage to cease. And while my experience cannot be said to be large, I am firmly convinced that patients with sufficient resistance to survive the immediate effects of rupture rarely die under appropriate treatment. Observation of the pathology in those cases that I have operated upon further leads me to believe that nature is fully able to cope with this emergency. The firm blood clot, the intestinal adhesions and the alert omentum so limit the blood space as to preclude the probability of a fatal hemorrhage. In one of my cases which I shall report, that of tubal abortion in the third month, the mass was so surrounded by the omentum and parietal peritoneum that not a drop of blood appeared beyond the limit of the adhesions. It seemed almost as if the abortion had been anticipated.

The ovarian artery is rarely involved in the ruptured tube. The intense hyperemia is the chief source of the hemorrhage, which from the nature of things may be expected to be severe while it lasts. The ragged nature of the wound facilitates clotting and the clot itself often exerts sufficient pressure, independent of the factors already mentioned to stop the bleeding.

CASE I.—Mrs. P., aged thirty-three years. One pregnancy eight years previously. Saw patient at her home, January 27, 1905, at 11 o'clock in the morning, within an hour of the beginning of her attack. She was in profound collapse. Her history indicated a ruptured tubal pregnancy at seven weeks. I had her carefully removed to the Pittsburg Hospital. Upon admission her pulse was barely perceptible, and could not be counted. Her treatment consisted of absolute rest in bed; ice caps to abdomen and small doses of strychnine as a vasomotor stimulant. She was watched carefully. At 5 o'clock in the evening, her condition was practically no better. At this time assuming that the pressure of the clot was sufficient to check hemorrhage, and that the blood pressure could be raised without danger, hypodermoclysis was begun. Patient reacted and made a gradual

recovery. That a large quantity of blood was lost is shown by a blood count made on the third day after rupture.

R. B. C. 1,420,000; W. B. C. 9,420; hem. 25%.

The succeeding counts indicate her gradual improvement.

Feb. 5, 1905, R. B. C. 2,900,000; W. B. C. 8,100; hem. 40%

Feb. 13, 1905, R. B. C. 3,540,000; W. B. C. 7,680; hem. 56%

Feb. 19, 1905, R. B. C. 3,550,000; W. B. C. 6,480; hem. 68%

Feb. 26, 1905, R. B. C. 4,170,000; W. B. C. 6,180; hem. 78%

Early in the case the patient had a localized peritonitis with some distention and marked tenderness. Temperature 102. This subsided so that at operation, February 28, 1905, pulse and temperature were normal and practically a normal blood count as indicated above. A large mass bulged the abdominal wall in right lower quadrant. Operation consisted of an abdominal section and the removal of the ruptured right tube, the right ovary and a large encapsulated blood clot. The left tube was also removed which was the seat of a marked salpingitis. The left ovary was not disturbed. Recovery was uneventful and the patient menstruates regularly.

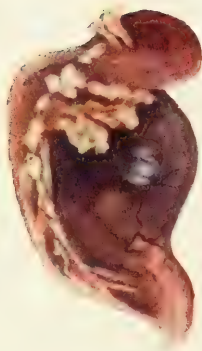
CASE II.—Mrs. G., aged thirty-five. Admitted to hospital February 1, 1905. Has had two children. Menstruation previous to present illness normal. She missed the January period, but about a week later began to have some uterine hemorrhage, and complained of pelvic pain. One week before her admission to Pittsburg Hospital, according to the history given by her family physician, she was seized with severe abdominal pain accompanied by marked symptoms of collapse. She was kept in bed and stimulated and considerable improvement was noted, as was also the presence of a large abdominal tumor for the removal of which she was sent to the hospital. At this time temperature 100.5 and pulse 122.

Blood count:

R. B. C. 2,750,000; W. B. C. 5,520; hem. 56%.

A large pelvic mass could be demonstrated by inspection and palpation. She was kept under treatment for about three weeks. At operation, February 20, 1905, temperature 98.6; pulse 56; blood normal. Abdominal section. Removal of a large encapsulated blood clot and, owing to general pelvic inflammation, a hysterectomy seemed to be indicated, which was accordingly done. Recovery uneventful and the diagnosis of tubal abortion was confirmed by the pathologist.

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N. M. Crider

UNRUPTURED TUBAL PREGNANCY.
FOUR TO SIX WEEKS' GESTATION. CASE No. XI.
REMOVED AUGUST 8TH, 1907.—*Stillwagen.*

CASE III.—Mrs. P., aged eighteen, was admitted to the Pittsburgh Hospital February 20, 1905. Her physician gave this history: The patient, a widow, while attending a dance in the country and during an altercation with her escort, received a kick in the abdomen. She fell to the floor and was removed to her home, unconscious. The doctor found her in a condition of collapse. The nature of the internal injury was, of course not known, but she quickly rallied and her symptoms gradually improved. Anemia was apparent. Later her physician found a mass in the abdomen, and elicited a history of a missed menstruation. The belated catamenia was supposed to have arrived about the time of her injury. Upon admission to the hospital, almost two months after the beginning of her illness, the patient was in fair condition; temperature and pulse normal; blood count showed

R. B. C. 3,590,000; W. B. C. 4,2220; hem. 64%.

A mass bulged the abdominal wall in the left lower quadrant. Abdominal section, February 27, 1905. Large encapsulated blood clot and tube and ovary of left side removed. Recovery uneventful. Microscopical examination confirmed the diagnosis of ruptured ectopic pregnancy.

In this case, in the event of an immediate diagnosis, if an attempt post-haste had been made to ligate the bleeding vessel and the patient had recovered, it would have been reported as a surgical triumph in the face of difficulties, in which the proverbial kitchen table would undoubtedly have figured. But if the patient had died, the operator could console himself with the reflection that he had followed the prevailing teaching and had done his best in the presence of an adverse environment.

CASES IV and V.—A case of recurrent ectopic pregnancy: Mrs. S., aged thirty. Married six years. No children. One miscarriage a year ago. Last menstruation January 6, 1905. Admitted to hospital March 23, 1905, with a history indicating a terminated tubal pregnancy two weeks before. A mass was easily palpable in right lower quadrant of abdomen, and there was marked abdominal tenderness with some distention. Temperature 102, pulse 100; blood count showed

R. B. C. 2,840,000; W. B. C. 6,400; hem. 55%.

Patient placed upon starvation diet and ice caps applied to the abdomen; temperature reached normal two days later. Feeding was begun cautiously. Ice caps continued. Her condition improved steadily and April sixth, fourteen days

after admission, her temperature was 98.6, pulse 88; blood count showed

R. B. C. 3,500,000; W. B. C. 3,840; hem. 68%.

Operation April 7, 1905. Abdominal section. Removal of right tube and an encapsulated blood clot containing a two months fetus. Ovary not removed. Recovery uneventful. Discharged May 11, 1905.

September sixteenth, or four months after her discharge from the hospital, I was called in consultation to see the same patient. A diagnosis of terminated ectopic pregnancy had already been made by the family physician. It had occurred three or four days previously when she was taken suddenly ill with severe abdominal pain and marked symptoms of collapse and anemia. Upon admission to the Pittsburg Hospital patient appeared pale and weak, temperature 100, pulse 102 and of poor quality. Blood count showed

R. B. C. 1,624,000; W. B. C. 12,000; hem. 30%.

A mass was easily palpable through abdominal wall. Tenderness was slight and there was no distention. The following day the temperature was 102 and the patient seemed septic. This was attributed to absorption from uterine cavity, there being a purulent vaginal discharge. A curettement was decided upon, which was performed September nineteenth. Her temperature dropped to normal within twenty-four hours. Uterine scrapings contained decidual cells and a coincident intrauterine pregnancy was suspected, but was not borne out by pathological findings. The following blood counts will indicate her steady improvement.

Sept. 26, 1905, R. B. C. 3,792,000; W. B. C. 6,200; hem. 60%

Oct. 3, 1905, R. B. C. 4,024,000; W. B. C. 9,400; hem. 73%

Oct. 11, 1905, R. B. C. 4,340,000; W. B. C. 3,600; hem. 82%

Temperature 98; pulse 84. Operation October 14, 1905. Abdominal section. Ruptured left tube and encapsulated blood clot containing fetus removed. Good recovery. Patient is at present in health and menstruates regularly.

Recurrent ectopic pregnancy is of not uncommon occurrence, but is scarcely frequent enough to justify the removal of a fairly sound tube for its prevention. As to the removal or not of the opposite tube, my own practice has been to be guided by the same degree of pathology, as when the abdomen is opened for other conditions.

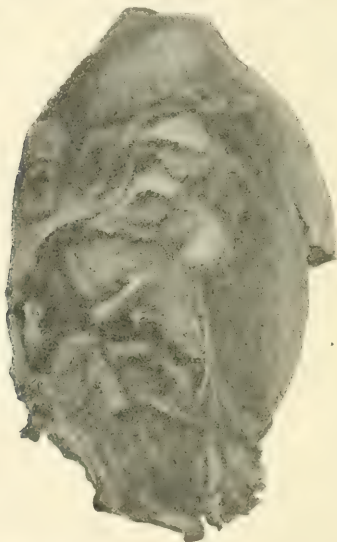
CASE VI.—Mrs. D., aged twenty-eight. Six children, youngest being two years old. Last normal menstrual period in December, 1905. Slight but constant uterine hemorrhage for six or seven weeks, and an increasing pelvic pain for about a month previous to her admission to Pittsburg Hospital, February 26, 1906. Vaginal examination showed uterus somewhat enlarged and a good sized mass in the position of the right tube. Diagnosis of unruptured ectopic pregnancy was made. Operation March 2, 1906. Abdominal section. A blood clot was protruding from the fimbriated extremity of the tube, but had formed adhesions to the parietal peritoneum and omentum. The tube was removed and contained a fetus corresponding in size to a two months gestation. Patient made a good recovery and left the hospital three weeks later.

CASE VII.—Mrs. S., admitted to Pittsburg Hospital, May 3, 1906. December 30, 1905, or four months before admission, she was seized with a violent pelvic pain. She had missed one period. She described her illness following her sudden attack as severe and her improvement gradual. She came to the hospital on account of a tumor she had discovered in her abdomen, and because her recovery had not been otherwise satisfactory.

Upon examination a huge mass was found rising almost to umbilicus. The uterus was pushed up behind symphysis, so that the cervix was reached with difficulty. Post. cul-de-sac bulging. Temperature 101.5, pulse 100. Record of blood count not available. Operation performed May 14, 1906. Temperature 99, pulse 72. Incision made in post. cul-de-sac and what seemed to be a very large amount of blood clot was evacuated. To the left of the uterus was found a firm mass, which I was unable to dislodge without undue violence. The abdomen was then opened and after separating intestinal adhesions, the encapsulated clot and ruptured tube were removed. Gauze drainage was inserted into the vagina through the incision previously made. Recovery uneventful. Diagnosis of ruptured ectopic pregnancy confirmed by microscopical examination.

CASE VIII.—Mrs. M., aged thirty. Last pregnancy four years ago, which terminated in a miscarriage at six months. Menstrual history normal previous to present illness. Last period in March, 1907. Since April first she had complained of pain over region of right ovary radiating down the thigh. About the same time there began a slight uterine hemorrhage. A mass, the size of a large orange could be felt in the position of the right tube. She

consulted her family physician, who made a diagnosis of unruptured tubal pregnancy, and sent her to the Pittsburg Hospital. Operation May 20, 1907. Abdominal section. Removal of



Unruptured ectopic gestation of four months. Case IX.

unruptured right tube containing fetus corresponding in size to a gestation in the third month. Ovary not removed. Recovery uneventful, patient leaving the hospital in two weeks.

CASE IX.—Mrs. H., aged thirty-five. Has had four normal labors and three induced abortions, the last occurring three years ago. Present illness began about the middle of April, 1907, and was characterized by a continuous pelvic pain in right iliac region, and upon admission to Pittsburg Hospital the following day, showed decided symptoms of a localized peritonitis. Temperature 101; pulse 100; some abdominal distention and marked tenderness. It was thought to be a terminated ectopic pregnancy. That the hemorrhage had not been severe was shown by the blood count.

R. B. C. 3,960,000; W. B. C. 9,600; hem. 72%.

Inflammatory symptoms subsided slowly and operation was

performed July 12, 1907, twenty-seven days after admission to the hospital; temperature 98.6; pulse 76. Abdominal section. There were many intestinal adhesions, after separating which, a blood clot was found, the remains of a hemorrhage from a threatened tubal abortion. The tube was found intact with fimbriated extremity closed. Tube contained fetus, period of gestation fourth month. Recovery good, patient leaving the hospital twenty-one days after operation.

CASE X.—Mrs. M., aged thirty-eight. One child. No miscarriages. Before rising on the morning of May 30, 1907, she was seized with a severe pelvic pain. She was so weak and dizzy that she decided to remain in bed. She was a servant and it was afternoon before her mistress realized the gravity of her condition. The family physician diagnosed a ruptured ectopic pregnancy and sent her to the Pittsburg Hospital. Upon admission, she was in a condition of profound collapse. No pulse could be felt. After the administration of physiologic salt solution by hypodermoclysis, patient reacted and made a slow recovery. Care was taken to afford the most absolute rest, and no pelvic examinations were made. A blood count made the following day shows the loss of blood to have been great.

R. B. C. 2,760,000; W. B. C. 13,800; hem. 18%.

A slow, but steady improvement is indicated by the following R. B. C.

June 10, 1907, R. B. C. 2,872,000; W. B. C. 12,000; hem. 24%
 June 18, 1907, R. B. C. 3,192,000; W. B. C. 9,000; hem. 34%
 June 27, 1907, R. B. C. 3,264,000; W. B. C. 8,600; hem. 40%
 July 6, 1907, R. B. C. 4,200,000; W. B. C. 14,400; hem. 44%
 July 13, 1907, R. B. C. 4,288,000; W. B. C. 10,400; hem. 55%
 July 22, 1907, R. B. C. 4,880,000; W. B. C. 10,400; hem. 60%
 July 27, 1907, R. B. C. 4,336,000; W. B. C. 11,600; hem. 65%

Operation July 29, 1907. Abdominal section. Removal of left ruptured tube and left ovary, and of a small encapsulated blood clot. Although this case presented the worst symptoms of any in my series of cases, the resulting pathology was perhaps the least. Recovery uncomplicated. Diagnosis of ruptured ectopic pregnancy confirmed by microscopical examinations.

CASE XI.—Mrs. P., aged thirty-six. One child five years old. No miscarriages. Menstrual history previous to present illness normal. In July, 1907, she missed her menstruation. July twentieth or nine days after the usual time for its occurrence, there began a moderately severe uterine hemorrhage, accom-

panied by pelvic pain about equally severe on either side, but radiating down the left thigh. She finally consulted her family physician and I saw her in consultation August 6, 1907. Physical examination revealed nothing pathological except a small mass to the left of the uterus which felt like a prolapsed cystic ovary. The abdominal wall was quite thick, and examination could not be made satisfactorily without undue violence. Her symptoms were so typical of ectopic pregnancy, however, that we decided upon this diagnosis, practically upon these alone. She was removed to the Columbia Hospital. At operation, we found the left broad ligament markedly congested and the left tube the seat of a pregnancy which from our data may be considered as not more than a six weeks gestation. The pregnant tube was removed. Recovery uneventful. The simplicity of this procedure and that of case No. VIII in comparison with those in which the pregnancy had already terminated must certainly recommend the early diagnosis and operation before rupture occurs, like prophyllaxis always, as the ideal treatment. There can be no doubt that these cases should be diagnosed more frequently. Dr. Philander A. Harris in a paper read before the American Medical Association in June of this year, says that in his series of 130 cases, 90 per cent. had consulted physicians on account of conditions referable to the pelvis before the tragic stage. He gives "atypical menstruation and pain" as the two distinctive symptoms and says: "When any woman after puberty, and before the menopause, who had menstruated regularly and painlessly, went four, five, six, eight, ten, fifteen or eighteen days over the time at which menstruation was due, saw blood from the vagina differing in color, quantity or consistence from her usual menstrual flow, and had pain generally severer in one side of the pelvis or the other, or possibly in the hypogastric region, ectopic gestation might be presumed."

This period passed, however, we have missed the accepted time for operation, which should be reserved for the removal of the resulting pathology when the patient has so far recovered from the shock, anemia and other complications incident to rupture, that the operative mortality should be practically *nil*.

During the discussion of a recent paper, the expectant plan of treatment was characterized as a "dangerous teaching" and as "a step backward," but I predict that the future will show results so convincing as to prove it decidedly a step forward.

EXTRA-UTERINE PREGNANCY.*

A CLINICAL AND OPERATIVE STUDY OF OVER ONE-HUNDRED CASES.

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(With Illustrations.)

THE two primary varieties of extra-uterine pregnancy, depending on the original point of attachment of a fertilized ovum, are, *tubal*, including *interstitial*, and *ovarian*. But the primary forms may assume, through rupture or further development, secondary forms: the *interstitial* may terminate as *uterine*; the other forms of *tubal* may become *intraligamentous*, *tubo-ovarian* and *abdominal*, and the *ovarian* may terminate as *abdominal*.

Primary ovarian pregnancy is one of the rarest conditions in gynecology; Williams in a thorough search of the literature for the past 100 years, has been able to collect only five cases of positive ovarian pregnancy.

In one of my specimens there was a suspicion of ovarian pregnancy, and chorionic villi were found in the ovarian mass, but as the specimen does not respond to all the tests laid down by Spiegelberg, namely; that (1) the tube must be intact; (2) the sac must occupy the position of the ovary; (3) that it must be connected with the uterus by the ovarian ligament; and (4) that ovarian tissue must be found in different parts of the sac, I am inclined to believe that it was rather a case of *tubo-ovarian*.

In *interstitial* pregnancy the impregnated ovum develops in the portion of the tube which lies within the uterine wall, and is the rarest variety of *tubal* gestation. Martin reports one case in seventy-seven of extra-uterine pregnancy; Kelly, in his book, states that he has never observed a case in 139 cases; Lawson Tait cites one case in 100 cases of extra-uterine pregnancy. In 1324 cases of extra-uterine pregnancy recorded collectively by Immigrotsky, by Schrenk, and by Rosenthal, forty were said to have been *interstitial*. Statistics obtained from more recent records show a still smaller percentage of

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cases. This is largely due to the fact that the older statistics include as specimens of interstitial pregnancy cases of cornual and tubo-ligamentary pregnancies, for which conditions interstitial pregnancy is very often mistaken. Two cases in my series were distinct examples of interstitial pregnancy.

The principal primary, and by far the most frequent variety therefore is tubal, so much so that it is practically synonymous with extra-uterine. The various forms of tubal pregnancy, designated according to the portion of the tube involved, are: 1. Interstitial. 2. Isthmic. 3. Ampullar. 4. Infundibular. (See Figs 1, 2, 3, 4 and 5.) Isthmic and ampullar are the most common.

ETIOLOGY.

Formerly it was believed that the fecundation of the ovum normally took place in the uterine cavity, and that when this occurred in the tube it was accidental, and tubal gestation was the result. It was also maintained that the direction of the movement of the ciliated epithelia of the uterine mucosa was upward, while the current produced by the ciliated epithelia of the mucous membrane of the tubes was downward, the former assisting in the movement of the spermatozoa toward the ovum, and the latter aiding in the progress of the ovum downward.

More recent observations have shown that the currents of the cilia both of the tubal and the uterine mucosa are from above downwards, that their function is to assist the ovum in its progress downward into the uterine cavity, and that the spermatozoa traverse the genital passages by their own motility. Recent experiments on animals have shown that fertilization of the ovum takes place in the tube, and observations on human females would tend to show that the same obtains in them.

Extra-uterine pregnancy results therefore when the transit into the uterine cavity of a fertilized ovum is interfered with, either as the result of obstructive changes within or external to the tube or to anatomical anomalies in the tube.

In its passage through the tube the fertilized ovum receives its nourishment from the tubal mucosa through the medium of a layer of very delicate villi, known as the primitive chorion, which grow from the ovum and give it a shaggy appearance. Since in a number of cases of extra-uterine pregnancy the tube

was found to be absolutely normal, and there was no evidence of ovarian or uterine disease, it is very probable that one of the causes may be found in a peculiar condition of the primitive chorion, the nature of which is as yet unknown.

In normal pregnancy a decidua is invariably formed from the uterine mucosa, while, according to many investigators, decidual formation from the tubal mucosa is entirely or nearly absent in tubal pregnancy. Webster maintains that when



FIG. 1.—Interstitial Pregnancy. (Unruptured.)

R. H.—Operated at Beth Israel Hospital, April 4, 1907.

F.—Fimbriated Extremity of Tube.

U.—Uterine Extremity of Tube.

O.—Ovary.

G.—Gestation Sac Enuclated from Uterine Wall.

deciduation does occur in the tube, tubal pregnancy is the result. That Webster's theory may be plausible, the experiments by other observers on animals would tend to prove. At the same time the weight of evidence of histologists is against any decidual development from the tubal mucosa in tubal pregnancy.

Among some of the causes suggested by various writers are the following: polypi and diverticuli of the tube; catarrhal or purulent salpingitis, especially of gonorrheal origin; stricture atresia, or torsion of the tube; peritoneal bands and adhesions constricting the tube; tumors and inflammatory exudates pressing on tube; anomalies or infantile development of tube.

I have found the above conditions present to a greater or less extent in my list of cases, but in the present light of our

knowledge it is difficult to differentiate with any degree of certainty between the actual etiological factors in this disease, and the complications and coincidences.

Two of my cases of ruptured tubal pregnancy had anatomical abnormalities of the tube; in one patient there was a complete congenital absence of the tube and ovary on the opposite side, and unfortunately the condition of the pregnant tube and of the



FIG. 2.—Tubal Pregnancy (Isthmic), Unruptured.
R. H.—Operated at N. Y. Polyclinic, May 7, 1898.
F.—Fimbriated Extremity.
U.—Uterine Extremity of Tube.
O.—Ovary.
I.—Tube Cut Showing Gravid Sac in Isthmic Portion.

ovary was such as to preclude saving any portion of either. The other case operated on recently at Beth Israel Hospital, had an undeveloped tube, terminating in a blind pouch, on the opposite side.

I desire to mention in particular, stricture of the tube as a cause of extra-uterine pregnancy because it proves conclusively the external migration of the fertilized ovum, a theory first advocated by Kussmaul, and now generally accepted.

Numerous specimens have been observed of tubal pregnancy

where a stricture of the uterine end of the tube would positively preclude the passage of the spermatozoa through the tube, and the corpus luteum of pregnancy in the ovary on that side would tend to confirm the theory of external migration. Henle explains this occurrence by the hypothesis, that the ova are carried along in currents in Douglas cul-de-sac, generated by the



FIG. 3.—Tubal Pregnancy (Ampullar), Unruptured.
T. F.—Operated at Beth Israel Hospital, April 25, 1907.
F.—Fimbriated Extremity of Tube.
U.—Uterine Extremity of Tube.
O.—Amnion.

ciliated epithelia which cover the fimbriæ of the tubes; this action has been demonstrated in animals by Pinner, Jani, and Lode.

This observation has a further bearing on the feasibility of conservative surgery on the adnexa, when it is at times found necessary to leave the ovary on one side and the tube on the other in order to avoid unsexing the woman.

HISTOLOGY.

Coincident with the discharge of an ovum from the Graafian follicle the uterine mucosa undergoes hypertrophy in anticipation of the implantation in the uterine cavity of the fertilized ovum. When the ovum fails to be fecundated, menstruation occurs. If the ovum becomes fertilized the uterine mucosa is converted into a decidua regardless of whether the ovum develops in the uterine cavity or in the tube. When the ovum develops in the uterine cavity the decidua undergoes further changes, until it comprises three parts, namely, decidua vera, decidua serotina, and decidua reflexa. If the fertilized

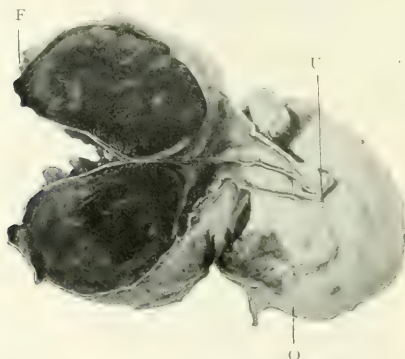


FIG. 4.—Tubal Pregnancy (Infundibular), Unruptured. Tube Cut Through.
A. K.—Operated at Beth Israel Hospital, May 19, 1907.
F.—Fimbriated Extremity.
U.—Uterine Extremity.
O.—Ovary.

ovum is arrested in the tube, the uterine decidua sooner or later undergoes retrograde changes, with its consequent discharge either in minute shreds with the bleeding from the uterus, or in the form of a cast of the uterine cavity.

Contrary to previous teachings, uterine casts are discharged but infrequently in tubal pregnancy: Kelly observed three decidual casts in 139 cases. In a series of 107 operative cases, and in almost an equal number of cases seen, but not operated on by me, I have had but two. Both patients were operated on before there was any bleeding from the uterus and in both the bleeding started immediately after opera-

tion and continued until the casts were expelled, within forty-eight hours. One of the cases is worthy of mention: Notwithstanding that the pregnancy had advanced to between the second and third month, there was no bleeding from the uterus, and in addition to the characteristic signs and symptoms indicating tubal pregnancy, the uterus was very much enlarged and presented the elastic feel of a pregnant uterus, so much so that the case was suspected to be one of combined intra- and

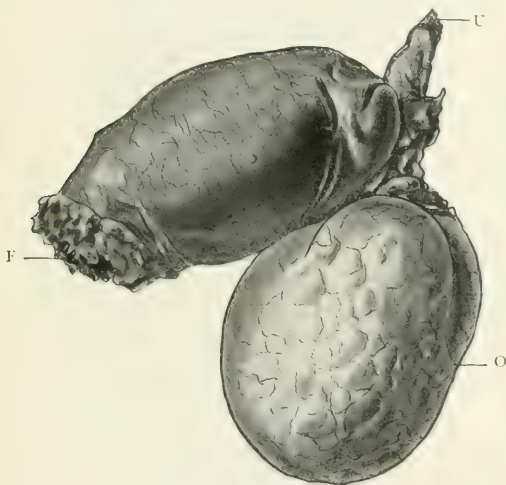


FIG. 5.—Same Specimen as Figure 4. Tube Intact.

extra-uterine pregnancy. Twenty-four hours after operation for removal of a pregnant tube, the woman was seized with uterine colicky pain, and expelled a very large and unusually well developed decidual cast of the uterus. (See Fig. 6.)

We may find in these two cases proof of the explanation for the uterine bleeding which occurs with tubal pregnancy, and also the reason why decidual casts are comparatively so rarely met with.

It appears to me that the uterine hemorrhage which is so constant a symptom of this disease, and which invariably ceases after the pregnancy has been interrupted, is the result of an early



A



B

FIG. 6.—Uterine Casts.

A. S. B.—Operated at Beth Israel Hospital, January 15, 1907

B. A. D.—Operated at Beth Israel Hospital, June 17, 1907.

separation and degeneration of the uterine decidua, in consequence of the failure on the part of the fertilized ovum to become attached in the uterine cavity. When for some reason this disintegration of the decidua does not take place, there is an



FIG. 7.—Tubal Pregnancy Showing Closed Ostium Abdominale.

S. B.—Operated at N. Y. Polyclinic, October 25, 1895.

U.—Uterine Extremity of Tube.

O.—Ovary.

F.—Closed Ostium Abdominalis.

absence of bleeding before the gravid tube is removed, and the decidua is subsequently expelled in the form of a cast of the uterus.

The development of the impregnated ovum in the tube is analogous to that in the uterus, but differs in certain important particulars; as pointed out above, in tubal pregnancy there is very little, if any, decidual formation produced from the tubal

mucous membrane. As a consequence, the placenta in tubal gestation originates entirely from the fetus, in contradistinction to the placenta in normal pregnancy which is composed of two sections, one derived from maternal and the other from fetal structures.

In tubal pregnancy therefore the chorionic villi attach themselves directly to the tubal mucosa, and as a result of the absence of the maternal decidua, which in uterine pregnancy acts as a protecting wall between the growing ovum and underlying

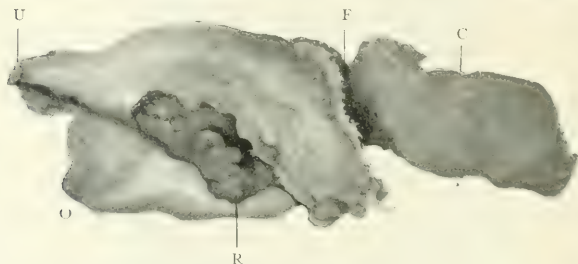


FIG. 8.—Simultaneous Tubal Abortion and Rupture.

L. L.—Operated at Beth Israel Hospital, December 30, 1902.

U.—Uterine Extremity.

F.—Fimbriated Extremity.

O.—Ovary.

R.—Rupture in Tube Wall.

C.—Coagulum Expelled from Ostium Abdominale.

tissue, penetrate the muscular and fibrous tissues until they lie immediately below the peritoneal coat. While the walls of the tube, under the influence of pregnancy become markedly distended and increased in vascularity, the muscular coats show comparatively little tendency to hypertrophy, as is the case in the uterine wall in normal pregnancy. In this hypertrophy of the vessels and accompanying thinning of the walls of the tube, and the burrowing tendency of the chorionic villi may be found the cause for the tendency to hemorrhage into the gravid sac, and for the rupture of the tube wall.

COURSE AND TERMINATION OF TUBAL PREGNANCY.

With the beginning of pregnancy that portion of the tube in which the fertilized ovum has engrafted itself becomes swollen and vascular, while at the same time the wall of the tube becomes

thinned and distended. Frequently, and especially when the site of the pregnancy is near the fimbriated extremity, the ostium abdominale of the tube becomes occluded. (See Fig. 7.) When it remains patent the pregnancy is more apt to terminate in a tubal abortion or tubal mole, although a patent and widely dilated ostium does not, as a rule, prevent rupture of the tube (see Fig. 8), and a closed ostium abdominale does not preclude the possibility of a tubal mole.

In tubal abortion or mole, the same changes take place

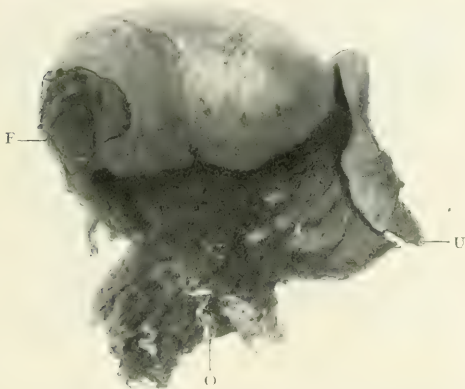


FIG. 9.—Threatened Tubal Abortion with Slight Bleeding from Fimbriated Extremity.

A. K.—Operated at Beth Israel Hospital, March 2, 1907.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity.

O.—Ovary.

in the gravid sac as occur in uterine abortion or mole. Hemorrhage takes place between the ovum and the tube wall, causing a partial or complete separation of the ovum, with bleeding, which may be moderate or profuse, into the abdominal cavity through the ostium abdominale. (See Figs. 9 and 10.) When the separation is complete the extravasated blood finally extrudes the ovum into the peritoneal cavity through the ostium abdominale and the hemorrhage may cease, thus producing a complete tubal abortion (see Fig. 11). When the sac is only partially separated the fetus may or may not be destroyed, while the hemorrhage into the peritoneal cavity through the ostium abdominale may con-

tinue for a longer or shorter interval. This constitutes an incomplete tubal abortion (see Figs. 12, 13, 14 and 15), and one of the most dangerous varieties, owing to the fact that the intra-abdominal hemorrhage, which begins and continues slowly and insidiously, may suddenly become profuse and find the patient in no condition to react to stimulation.

When the hemorrhage between the ovum and the tube wall is



FIG. 10.—Threatened Tubal Abortion with Slight Bleeding from Fimbriated Extremity.

A. G.—Operated at Beth Israel Hospital, June 17, 1907.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity, from which there was Slight Bleeding.

G.—Tube Cut Open Showing Fetus and Placenta.

moderate, the gravid sac may become infiltrated with blood and be converted into a mole, which will remain in the tube if the ostium is closed, or be expelled into the peritoneal cavity (see Figs. 16 and 17).

If separation takes place in the interstitial variety the ovum may, in some instances, be projected into the uterine cavity and, if viable, terminate in a uterine pregnancy, or, if otherwise, in a uterine abortion.

Statistics of Abortion.—Statistics with regards to the frequency of tubal abortion as compared with rupture, vary greatly, as, for instance: Robb, in the *Journal of Obstetrics and Gynecology* for July, 1907, quoting the statistics of various

authors, gives figures ranging from 15 to 37 per cent. for rupture, and from 37 to 78 per cent. for abortion. My series shows a much larger percentage in favor of rupture, which was found almost twice as often as abortion. This may be accounted for by the particular aversion, on the part of the class of patients I had to deal with, to submit to operation unless the condition threatens life, which is probably also the reason for the comparatively large number of cases that were seen by me in extreme collapse. I have no doubt, however, that the large majority

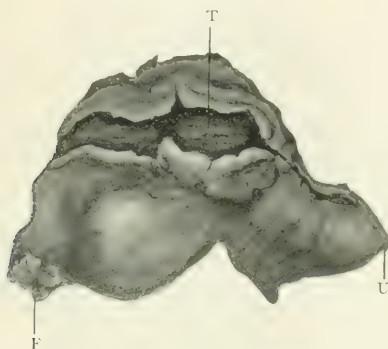


FIG. 11.—Complete Tubal Abortion.

J. K.—Operated at Beth Israel Hospital, October 18, 1900.

U.—Uterine Extremity.

F.—Fimbriated Extremity.

T.—Tube Cut Showing Engorged Mucosa.

of the patients who were seen by me while suffering from tubal pregnancy, but did not submit to operation, were cases of tubal abortion.

When tubal pregnancy does not terminate in an abortion, it almost invariably culminates in a rupture of the tube (see Figs. 18, 19, 20, 21, 22 and 23). This may occur as early as the sixth week or may be postponed until the fourth month. Rupture is usually followed by the escape of the ovum into the peritoneal cavity (see Fig. 24) or by its extrusion between the layers of the broad ligament, but this may not take place until one or more ruptures has occurred. When rupture is due to overdistention and attenuation of the walls of the tube

produced by the growing ovum or by hemorrhage into the tube the rent may be small or extend the entire length of the tube (see Fig. 25). When caused by the penetrating and eroding villi, the opening may be no larger than a pin-head (see Fig. 26).

One or even more ruptures of the tube may occur and cause no interruption of the pregnancy; in that case the bleeding is slight and the blood clot seals the perforation in the tube wall.



FIG. 12.—Incomplete Tubal Abortion (Ampullar Variety).

B. K.—Operated at Beth Israel Hospital, May 21, 1907.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity.

O.—Ovary.

G.—Tube Cut Open Showing Gestation Sac.

The termination of the various forms of ruptured tubal pregnancy is not by any means uniform and their multitudinous sequelæ lend additional interest to this serious and at times very formidable disease.

Rupture in the circumference of the tube which is not covered by peritoneum and which lies between the separated layers of the mesosalpinx, will cause hemorrhage between the folds

of the broad ligament, and result either in a destruction of the ovum and the formation of a hematoma of the broad ligament (see Fig. 27), or in a continuation of the pregnancy between the layers of the broad ligament as an intra-ligamentous form. The latter, in turn, may secondarily rupture and cause the death of the fetus, and threaten the life of the mother from internal hemorrhage, or occasionally the viable fetus may partially escape into the peritoneal cavity through the rent in the broad ligament and continue as an abdominal pregnancy (see Fig. 28). Very rarely

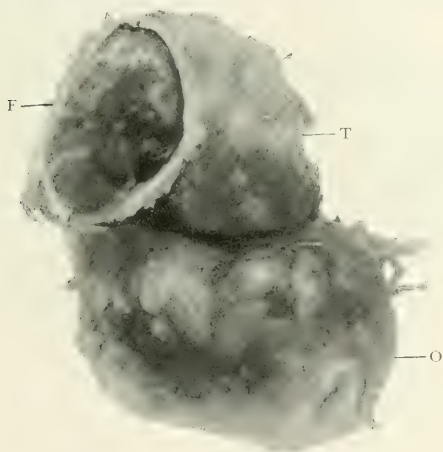


FIG. 13.—Incomplete Tubal Abortion (Infundibular Variety).

L. C.—Operated at Beth Israel Hospital, March 18, 1907.

O.—Ovary.

T.—Tube.

F.—Ostium Abdominale Distended by Extruded Gestation Sac.

the intra-ligamentous pregnancy may go to term by dissecting the layers of the broad ligament and lifting up the parietal peritoneum.

When rupture takes place in any portion of the tube covered by peritoneum, there will be more or less hemorrhage into the peritoneal cavity; the fetus may die or it may continue to grow, attached partially to the tube (and this will happen especially if the placenta has not been injured) and partially to the abdominal viscera and continue as an abdominal variety (see Fig. 29).

As the placenta in tubal pregnancy has no fixed point of insertion but may develop at any point and in any direction of the tube the fate of the fetus and the amount of hemorrhage will depend in a measure on whether the tear occurs through the placental site or not.

When the amount of blood lost with the extrusion into the peritoneal cavity of a dead ovum is not very profuse, it becomes

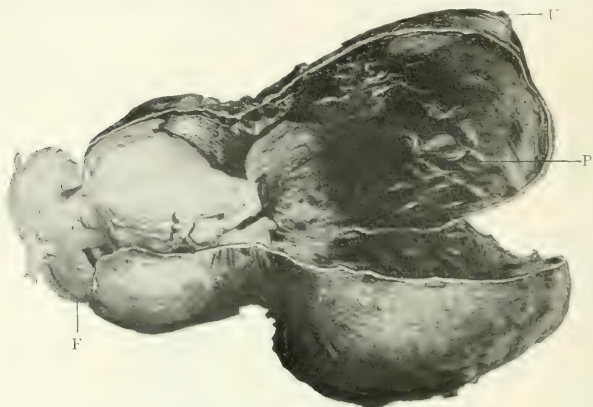


FIG. 14.—Incomplete Tubal Abortion with Fetus about to Escape into Peritoneal Cavity, also Showing Thinning and Distention of Tube Wall.
Mrs. L.—Operated at N. Y. Polyclinic, August 22, 1906.
U.—Uterine Extremity.
P.—Distended Tube Wall, Cut, Showing Placenta.
F.—Fetus Protruding from Ostium Abdominale.

walled off by adhesions from the rest of the cavity and forms a hematocele, which may either be absorbed or go on to sup-puration.

Primary tubo-abdominal or tubo-ovarian pregnancies are really tubal forms of pregnancies; in the former the fertilized ovum becomes engrafted in the fimbriated end of the tube and gradually encroaches toward the abdominal viscera (see Fig. 30); while the latter is due to the implantation of a fecundated ovum in a fimbriated extremity that is adherent to the ovary (see Fig. 31).

Primary abdominal pregnancy has never been positively demonstrated. In secondary abdominal pregnancy the fetus

may go to term, or when its death has occurred, it may either be absorbed or undergo suppuration. Occasionally it terminates in mummification or lithopædion formation.

The ovum in tubal pregnancy is subject to the same diseases as in uterine pregnancy, as for instance: Hydatiform mole, hydramnios and deciduoma malignum, and likewise there may be



FIG. 15.—Incomplete Tubal Abortion with Fetus in Abdominal Cavity.

A. T.—Operated at Gouverneur Hospital, August 27, 1906.

U.—Uterine Extremity of Tube.

F.—Ostium Abdominale, Patulous.

P.—Placenta.

multiple tubal pregnancies, of which there are a number of recorded cases.

As regards successive tubal pregnancies, four of my patients had a recurrence of the disease. One was operated on by me twice, in Jan., 1897, at the Polyclinic, and in Jan., 1900, at the Frauenclinic; another returned to me while suffering from tubal pregnancy after having been operated by me a year previously for the same condition and was operated and the diagnosis confirmed at Mt. Sinai Hospital, and a case of Dr. David Hyman's went to Europe to have the operation done; the fourth case I lost sight of.

I never had a case of combined intra- and extra-uterine pregnancy. In a patient of Dr. S. Spiegel's, operated on by me at Beth Israel Hospital, the doctor assured me of the expulsion of a distinct ovum from the uterine cavity shortly before the operation for tubal pregnancy.

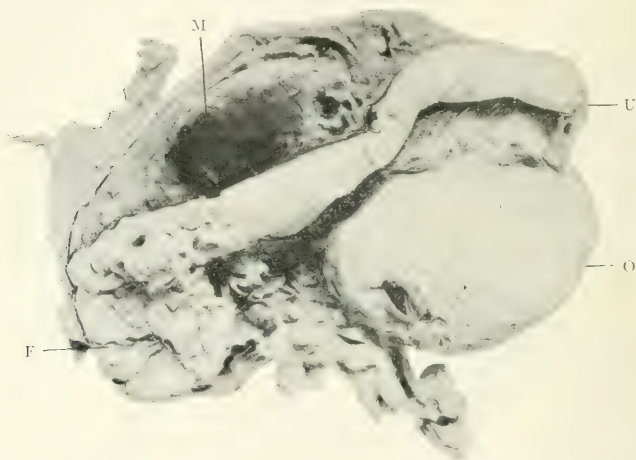


FIG. 10.—Tubal Abortion Terminating in Mole, still Present in Tube.
Mrs. K.—Operated at Beth Israel Hospital, August 10, 1901.
U.—Uterine Extremity of Tube.
F.—Fimbriated Extremity of Tube.
O.—Ovary.
M.—Mole in Tube.

The only variety of ectopic gestation I have not had the good fortune to observe is a full term pregnancy.

SYMPTOMATOLOGY AND DIAGNOSIS.

It is my firm belief, and this opinion is shared by others, that the signs and symptoms of tubal pregnancy are sufficiently distinct and are grouped so characteristically that the diagnosis of tubal pregnancy can be made with a degree of certainty fully as great as in other diseases of the pelvic organs. The presence of all the characteristic signs and symptoms will render the diagnosis almost absolute; at times even, if only

one or two can be elicited, in the absence of signs pointing to other pelvic lesions, a presumptive diagnosis can be made.

In taking up for consideration the diagnosis and symptoms of tubal pregnancy, we must differentiate two distinct classes, the ruptured and the unruptured.

THE DIAGNOSTIC SIGNS IN THE UNRUPTURED TYPE ARE AS FOLLOWS:

1. Amenorrhea: Cessation of menstruation is invariably present although a positive history to that effect cannot always

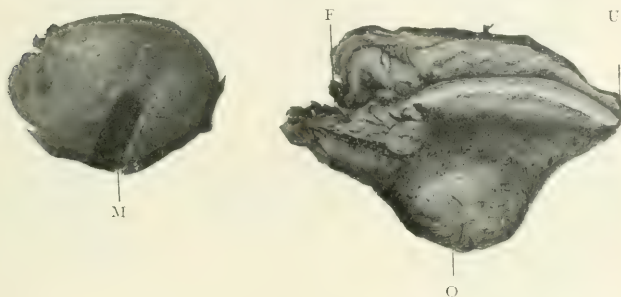


FIG. 17.—Tubal Abortion Terminating in Mole, with Mole Discharged into Peritoneal Cavity.

Mrs. A.—Operated at Beth Israel Hospital, May 20, 1906.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity of Tube.

O.—Ovary.

M.—Mole in Peritoneal Cavity.

be obtained; the patients have either carelessly overlooked the fact or purposely denied it in order to mislead the physician. If tubal pregnancy occurs during lactation, of which I have seen several cases, there are of course no data to base any calculation on.

2. The patient often feels that she is pregnant and may have the characteristic subjective signs peculiar to some individuals; occasionally the patient may suspect that this pregnancy differs in some manner from her other gestations.

3. Pain is a constant symptom of tubal pregnancy and is due to the distention of the tube by the constantly growing ovum. It is sharp, lancinating, and paroxysmal in character and increases in severity as pregnancy advances; the patient

will not only refer the pain to the affected side, but will distinctly refer it to the ovarian region. The localization of the pain is analogous to McBurney's point in appendicitis with the difference that while in the latter condition the painful spot is elicited on pressure, in the former it is a subjective sign. The pain does not radiate in the pelvis nor is it reflected to other parts of the abdomen, as is the case in appendicitis or disease of the adnexa, nor is it influenced by position or exertion. In



FIG. 18. —Ruptured Tubal Pregnancy (Very Early Isthmic).
 Mrs. G.—Operated at Fleischmanns, August, 1906.
 U'.—Uterine Extremity of Tube.
 I.—Ruptured Isthmic Portion of Tube.
 F.—Fimbriated Extremity of Tube.
 O.—Ovary.
 C.—Corpus Luteum of Pregnancy Discharged from Ovary.

early pregnancy pressure on the abdominal wall will not elicit pain.

4. Bleeding from the uterus: As a rule bleeding from the uterus begins about the sixth week of tubal pregnancy; in some cases it may not occur until somewhat later, and in very rare instances not until the third or fourth month. The bleeding is usually very scanty in amount, is never profuse and in some respects is characteristic of this condition; the blood is rather dark and grumous and does not possess the peculiar odor of the menstrual discharge; it is not as shreddy and clotty as is the

discharge in incomplete abortion. The decidua is rarely expelled in the form of a cast.

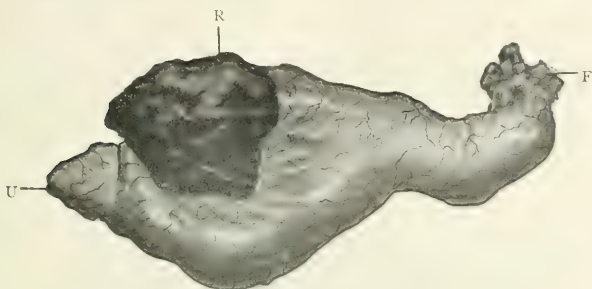


FIG. 19.—Ruptured Tubal Pregnancy (Isthmic).

A. H.—Operated at Beth Israel Hospital, January 3, 1907.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity.

R.—Ruptured Isthmic Portion of Tube.

5. Enlargement of the uterus: The uterus is invariably enlarged in tubal pregnancy, and, I desire to emphasize the fact, its consistency is that of the normal non-pregnant uterus. In the

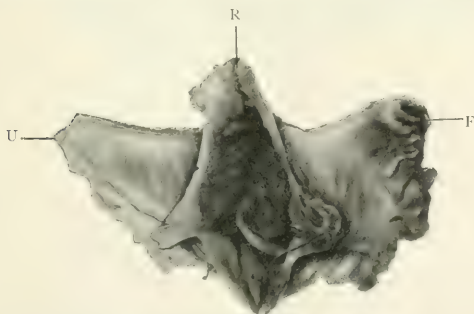


FIG. 20.—Ruptured Tubal Pregnancy (Ampullar).

F. R.—Operated at Beth Israel Hospital, March 30, 1907.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity.

R.—Rupture in Ampullar Portion of Tube.

very exceptional cases where there is no bleeding from the uterus and the decidua is subsequently expelled in the form of a cast, the uterus presents an elastic area in the anterior wall. This

leads me to a consideration of the sign of early pregnancy to which, with your kind permission, I will here refer but very briefly: I attempted to show in a paper which I recently published that an invariably reliable sign of early uterine pregnancy is found in the peculiar elastic feel of a small area in the anterior wall of the uterus at the junction of the body and the cervix. Based on the presence of this sign a diagnosis of uterine pregnancy can be made with absolute certainty; likewise the absence of this sign in the anterior wall will preclude a diagnosis of uterine pregnancy with an equal degree of positiveness.

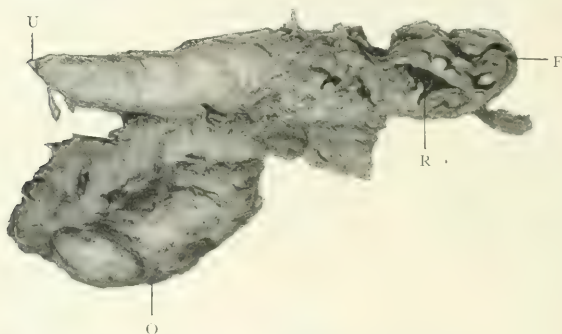


FIG. 21.—Ruptured Tubal Pregnancy (Infundibular).

Mrs. Y.—Operated at N. Y. Polyclinic, February 21, 1901.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity of Tube.

O.—Ovary.

R.—Rupture in Infundibular Portion of Tube.

As uterine pregnancy is one of the principal conditions to be considered in cases of suspected tubal pregnancy, we have in the above sign an excellent and most reliable means of differentiation.

6. The formation of a mass on one side, which increases in size as pregnancy advances, is one of the distinctive signs of tubal pregnancy and the enlargement of that portion of the tube where the ovum happens to have developed, offers to the palpating finger the feel of an elastic, sensitive, tender and well-defined fusiform tumor, which is freely movable, unless there were previous adhesions about the tube. The physical signs of a tube distended by a gravid sac are sufficiently character-

istic to enable one, as a rule, to readily exclude hydrosalpinx, pyosalpinx, ovarian and parovarian cysts, retroverted pregnant uterus, pelvic abscess, uterine tumors, etc.

Two negative signs of great importance in determining the presence of tubal pregnancy, either of which will occasionally prove the deciding factor in establishing a diagnosis, are, the exclusion of uterine pregnancy, and the absence of elevation of



FIG. 22.—Ruptured Tubal Pregnancy (Infundibular) with very little Hemorrhage.

S. K.—Operated at Beth Israel Hospital, May 30th, 1907.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity of Tube.

O.—Ovary.

R.—Rupture in Infundibular Portion of Tube.

temperature. Unruptured tubal pregnancy as such, does not cause a rise of temperature, and in that respect is identical with uterine pregnancy; of course after rupture has taken place we may have a rise of temperature. The blood extravasated into the peritoneal cavity the result of tubal abortion or rupture, whether it is free, circumscribed, or encapsulated, may form a culture medium for bacteria, and be the cause of elevation of temperature occasionally found in ruptured cases. A rise of temperature in unruptured tubal pregnancy is usually due to coexisting inflammatory processes.

SYMPTOMS AND DIAGNOSIS IN RUPTURED TUBAL PREGNANCY.

There are additional local and constitutional signs and symptoms in ruptured tubal pregnancy when seen during, or immediately after the rupture, that are pathognomonic of the condition. When a rupture is slight and only small vessels are involved, the amount of bleeding into the peritoneal cavity may produce no further symptoms than a sudden severe lancinating pain, followed by general abdominal pains, nausea, vomiting, and

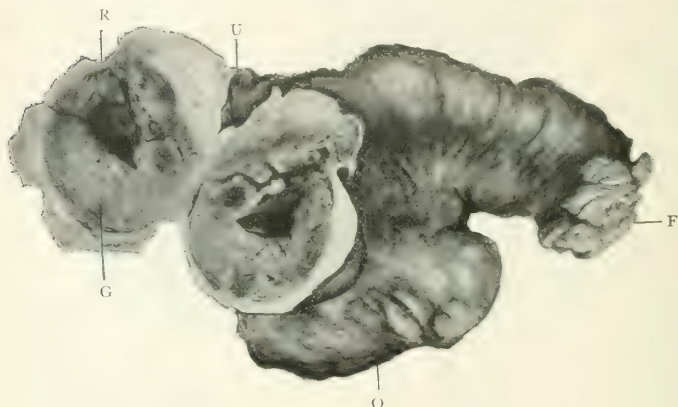


FIG. 23.—Ruptured Tubal Pregnancy (Interstitial) with Profuse Hemorrhage.

R. N. —Operated at Beth Israel Hospital, October 11, 1900.

U. —Uterine Extremity of Tube.

F.—Fimbriated Extremity of Tube.

O.—Ovary.

G.—Gestation Sac Enucleated from Uterine Wall, Cut Showing Ovum.

R.—Site of Rupture.

prostration. Likewise when the rupture takes place between the separated layers of the mesosalpinx, hemorrhage is usually not very profuse and produces very little and very indefinite signs of internal bleeding.

When, on the contrary, the hemorrhage between the layers of the broad ligament or into the peritoneal cavity is profuse, the signs of internal hemorrhage are present to a greater or lesser degree, and consist of restlessness, shock, collapse, and even unconsciousness. There are extreme anemia and blanching of the mucous membrane, thirst, air-hunger, and shallow and

rapid respiration, feeble pulse and subnormal temperature. Locally the abdomen may be distended and tender, and palpation may elicit a fluid wave. Bimanual examination will, as a rule, reveal a soft boggy tumor to one side or the other, which appears to the examining finger to be undefined in contour and may change its shape and position under manipulation. When the gravid contents have become entirely detached and float in the peritoneal cavity, no localized tumor may be palpable and the only proof of the rupture will be the evidence of free fluid in the pelvic cavity.

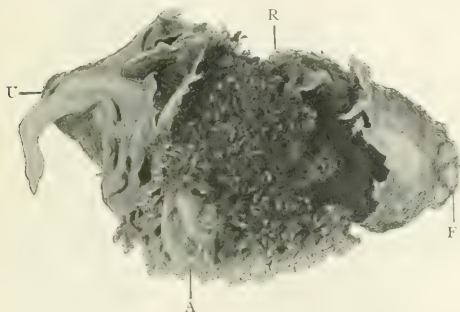


FIG. 24.—Tubal Rupture (Ampullar Variety) with Expulsion of Intact Chorion.
 R. G.—Operated at Gouverneur Hospital, October 24, 1904.
 U.—Uterine Extremity of Tube.
 F.—Fimbriated Extremity of Tube.
 R.—Rupture of Ampullar Portion of Tube.
 A.—Intact Chorion.

Successive ruptures may occur at longer or shorter intervals to be finally followed by any of the above sequelæ. Should the patient survive the immediate effect of the hemorrhage without operative interference, the case may terminate as a hemothecoele or pelvic abscess, requiring subsequent attention.

Shock and collapse due to internal hemorrhage from ruptured tubal pregnancy may simulate lesions of other abdominal viscera, as for instance, perforation of stomach, of duodenum, of small intestine, or of appendix; rupture of pyosalpinx; twisted pedicle of ovarian cyst; torsion of the tube; acute intestinal obstruction; renal and biliary colic. But a careful study of the differential symptoms presented by such cases will very often clear up the diagnosis without any difficulty.

I met with two conditions, however, when a differential diagnosis was well nigh impossible; one a case of spontaneous amputation of twisted pedicle of an ovarian cyst with copious internal hemorrhage, and the other torsion of the tube with cyst of fimbriated extremity, both very rare conditions, the histories of which are sufficiently interesting to deserve detailing here.

S. A., age thirty-six, married fourteen years. Has had ten

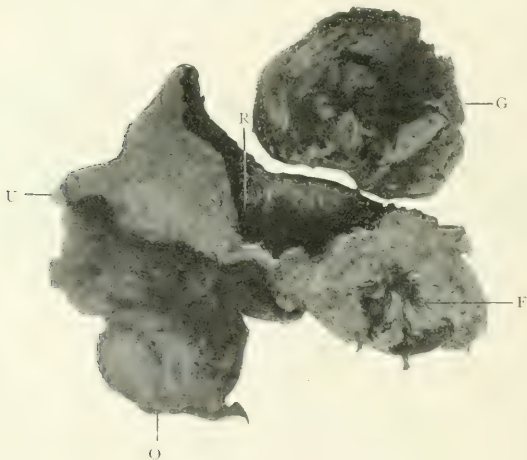


FIG. 25.—Tubal Pregnancy with very large Rent of Tube.
 A. H.—Operated at Beth Israel Hospital, January, 1898.
 U.—Uterine Extremity of Tube.
 F.—Fimbriated Extremity of Tube.
 O.—Ovary.
 R.—Rupture of Tube Wall.
 G.—Gestation Sac Expelled into Peritoneal Cavity.

children. Began to menstruate at seventeen, irregular in type, the menstrual period occurring q. six to eight weeks; moderate in amount but very painful. Two of her children were born prematurely. Last child one year old, and still nursing.

Present History.—Four months ago she began to complain of pain in the left iliac region; the pain radiated towards the hypogastric region. One week ago she again started to feel cramp-like pains at intervals in right iliac region; she fainted on

the day of attack and on the following day; and had fainting spells on day of admission. Vomited occasionally. On admission to Beth Israel Hospital, March 24, 1899, temperature 100.6° , pulse 128, abdomen distended and patient showed evidence of shock.

Vaginal Examination.—Shows a large, irregular, tense mass in front and to one side of uterus.

Under ether anesthesia a laparotomy was performed; the



FIG. 26.—Tubal Pregnancy with Perforation.

Mrs. K.—Operated at Beth Israel Hospital, November 6, 1900.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity of Tube.

O.—Ovary.

P.—Pin-hole Perforation in Ampullar Portion of Tube.

C.—Cut Tube Showing Gravid Sac.

peritoneal cavity was found to contain a large quantity of free blood; a tumor, which proved to be an ovarian cyst with a twisted pedicle, was removed. There were four full turns in the pedicle, and at one point there was a tear extending across about two-thirds of its transverse diameter, which was the source of the hemorrhage (see Fig. 32).

The patient made an uninterrupted recovery.

R. S., age twenty-eight; married five years, no children, no abortions. Began to menstruate at sixteen, regularly q. twenty-four

days, lasting but one day, and painless. Menstruated irregularly for past three months.

Was dilated two years ago for sterility. For the last eight months has been complaining of pain on left side of abdomen preceding each menstrual period; no chills or fever. Has been in bed for the last week with very severe and continuous cramp-like pain on the left side. No vaginal bleeding or discharge.



FIG. 27.—Tubal Pregnancy with Rupture into Broad Ligament.
I. R.—Operated at Beth Israel Hospital, April 1, 1907.
U.—Uterine Extremity of Tube.
O.—Ovary.
H.—Hematoma of Broad Ligament.

Vaginal Examination.—Cervix elongated, uterus slightly anti-flexed, freely movable, normal in size and consistency. To the left and posteriorly there is a distinct ovoid mass, tender and cystic in character.

Operation, October 28, 1907. Laparotomy. Pathological findings: Pelvic cavity contained slight amount of free blood; left tube was twisted about three and a half turns near its uterine extremity; left ovary cystic. The tube was filled with a blood clot and contained a cyst the size of a walnut at the fimbriated extremity. The right adnexa showed a salpingitis, and part of the tube was removed. (See Fig. 33.)

Notwithstanding that the diagnostic factors are more numerous

in ruptured tubal pregnancy than in unruptured cases, the diagnostic signs of the unruptured, taken as a group or singly, are more peculiarly characteristic of the disease, while the signs and symptoms of an old ruptured pregnancy, in some few instances,



FIG. 2S.—Tubal Pregnancy with Rupture between Layers of Broad Ligaments and Continuation of Pregnancy as Intra-ligamentous Variety, with Final Rupture into Peritoneal Cavity.

L. R.—Operated at Beth Israel Hospital, June 12, 1895

F.—Fetus Removed from Peritoneal Cavity.

P.—Placenta Developed between Layers of Broad Ligament.

cannot possibly be differentiated from other pathological conditions of the pelvis.

This refers to cases seen some time after one or more ruptures have taken place, and not to cases seen while the bleeding is still in progress from a rupture or abortion, and which do not present any difficulty in making a diagnosis.

You will notice that I have said nothing with reference to an

exploratory vaginal section for diagnostic purposes in tubal pregnancy, which is still advocated by some writers. It is my belief that such a proceeding is absolutely unnecessary in our present knowledge of the disease.

DIFFERENTIAL DIAGNOSIS OF INTERSTITIAL PREGNANCY.

The differential diagnosis between interstitial pregnancy and pregnancy of the rudimentary horn is exceedingly difficult.

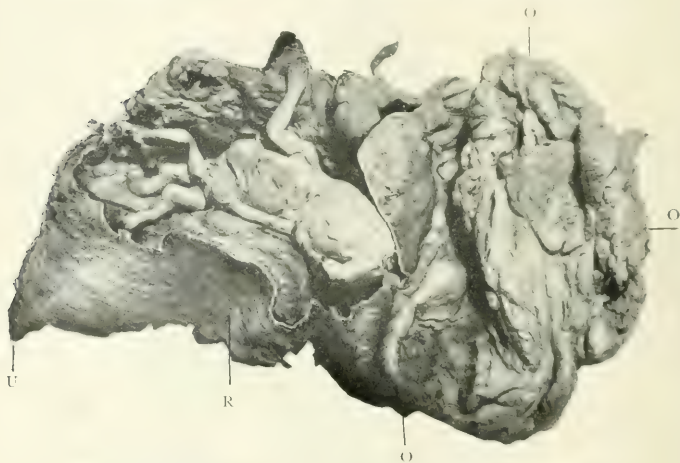


FIG. 20.—Ampullar Tubal Pregnancy with Rupture, Terminating in Tubo-abdominal, and Final Rupture into Peritoneal Cavity.

A. H.—Operated at N. Y. Polyclinic, May 27, 1895.

U.—Uterine Extremity of Tube.

O.—Omentum, Forming Outer Wall of Gravid Sac.

R.—Rupture of Ampullar Portion of Tube Showing Fetus in Situ.

The chief point of difference is that in interstitial pregnancy the sac communicates by an orifice with the uterine cavity, or is separated from it by a septum; while in pregnancy of the rudimentary horn the uterine cavity is divided above by a septum into two compartments, and forms one canal below at the cervical portion. Another point of distinction is that in interstitial pregnancy the round ligament lies to the inner side of the sac, whereas in pregnancy of the rudimentary horn the round ligament is found to the outer side of the sac.

Interstitial pregnancy differs in its course and termination

from tubal pregnancy. If interstitial pregnancy does not terminate in uterine pregnancy, rupture into the peritoneal cavity generally occurs from the second to the fourth month, and may be delayed much later, occasionally until the ninth month. Because of the thicker wall and the greater vascularity of the sac, intraperitoneal rupture is usually more rapidly fatal in this variety than in ordinary tubal rupture.

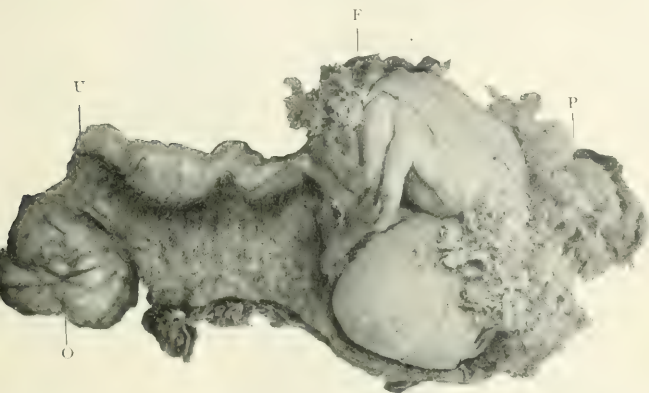


FIG. 30.—Infundibular Tubal Pregnancy with Rupture, Terminating in Tubo-abdominal, with Final Rupture into Peritoneal Cavity.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity of Tube.

O.—Ovary.

P.—Placenta Attached to Intestines and Omentum.

In twenty cases of primary ruptured interstitial pregnancy, enumerated by Rosenthal, all proved fatal.

TREATMENT.

As the inevitable result of extra-uterine pregnancy is the death of the fetus, and unless recognized in time, very frequently that of the mother, the only rational treatment is operative, and fortunately there is no difference of opinion on that score at the present time.

I have no doubt that the case, cited by Sutton, of the sudden death of a woman in a Paris café, which was considered a case of poisoning until the autopsy revealed it to be a ruptured tubal pregnancy, has been duplicated many times since. I feel quite

certain that many cases of sudden death in parturient women ascribed to heart failure, etc., were in reality due to ruptured tubal pregnancy.

While it is true that a certain percentage of cases recover spontaneously, and I would include in this list especially cases of tubal abortion, it is also true that the percentage of recoveries

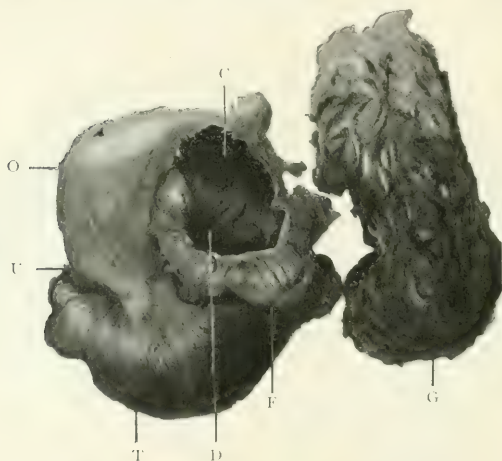


FIG. 31.—Tubal Pregnancy with Rupture, Terminating in Tubo-ovarian. Gestation Sac Developing in both the Tube and Ovary. Omentum Attached to Upper Border of Sac.

U.—Uterine Extremity of Tube.

F.—Ostium Abdominale, Patent and Widely Dilated.

T.—Tube.

O.—Ovary.

D.—Distended Tube.

C.—Cavity in Ovary.

G.—Gestation Sac Occupying Cavities in both Tube and Ovary.

from operations in the hands of competent men is exceedingly large. In 107 operations I have had one death and that was due to tertiary hemorrhage three days after the operation, in an absolutely undoubted case of hemophilia. The case was admitted to Beth Israel Hospital in 1902, and was one of tubal abortion with slight hemorrhage into peritoneal cavity and required simple ligation and removal of the tube and ovary. Twelve hours after operation patient showed signs and symptoms

of internal hemorrhage. The abdomen was reopened. No bleeding vessels were found but there was general oozing from the stitch holes. Clamps were applied to the broad ligament, and the pelvis was completely and tightly packed with iodoform



FIG. 32.—Spontaneous Amputation of Twisted Pedicle of Ovarian Cyst, with Profuse Hemorrhage in Peritoneal Cavity, Simulating Ruptured Tubal Pregnancy.

S. A.—Operated at Beth Israel Hospital, March 24, 1899.

C.—Collapsed Cyst.

T.—Showing Twists of Pedicle.

A.—Site of Spontaneous Amputation of Pedicle.

gauze which was allowed to protrude from the abdominal incision. Forty-eight hours later there was a sudden discharge of fresh blood from the gauze through the abdominal wound and the patient expired.

My series of cases was operated on as follows: Sixty-seven

in Beth Israel Hospital, twenty-four in the N. Y. Polyclinic Hospital, eleven in Gouverneur Hospital, one in Fraucelnic, and three were performed at the home of the patients: One, with Drs. Kohn and Rottenberg, was operated on in a summer hotel, and the other two, cases of Drs. Alexander Lyle and Z. Sharfin respectively, in tenement houses. The patient operated on with Dr. Lyle, a ruptured broad ligament pregnancy, was done under the most trying circumstances owing to the urgency of the case.

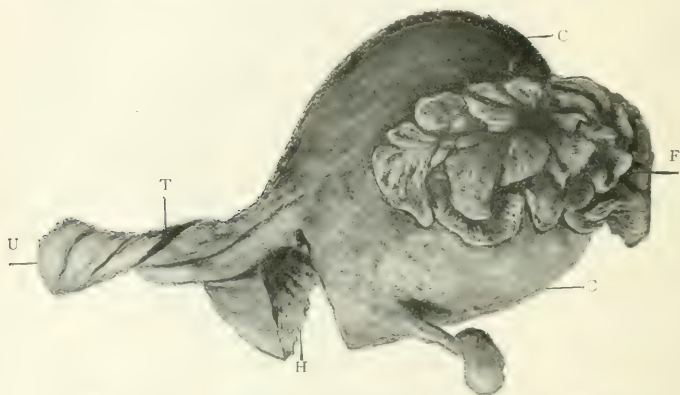


FIG. 33.—Torsion of Tube with Formation of Tubal Hematoma and Hemorrhage into Pelvic Cavity.

R. S.—Operated at Beth Israel Hospital, October 28, 1907.

U.—Uterine Extremity of Tube.

F.—Fimbriated Extremity of Tube.

T.—Twists of Tube.

C.—Cyst in Infundibular Portion of Tube.

H.—Hematoma of Tube Showing Section Removed for Microscopic Examination.

It was practically a pen-knife operation and the patient made a good recovery.

I have looked upon unruptured extra-uterine pregnancy in the nature of a foreign growth and have invariably advised operation. Hemorrhage from rupture I regarded in the same light as hemorrhage from any other source and I have always followed the universally recognized axiom of surgery, that the hemorrhage should be checked as quickly as possible. I have therefore repeatedly operated where there was no pulse at the radial, and at times the operation was done when the patient was absolutely

unconscious and didn't require anesthesia, either general or local. As an illustrative case I will cite the following:

Mrs. Lustig, married nine years. Began to menstruate at fourteen, regular, moderate and painless. Has had two children, last seven years ago; two miscarriages, last one year ago. Menstruated last two months ago. Four years previously, after first miscarriage, began to suffer from pain in back and pelvis. Two and a half years ago was operated on for pelvic tumor, by the vaginal route, at the New York Infirmary for Women.

Present History.—Three weeks prior to admission to Beth Israel Hospital, on December 30, 1902, after amenorrhea for five weeks she was seized with sharp pain in pelvis; pain lasted about two hours at a time, would cease and then recur every three to four hours. This continued for about four days, when the pain lessened both in severity and frequency. She then began to have metrorrhagia, and vomited on several occasions. No chills or fever. On day of admission she called at her physician's office for treatment and while waiting in reception room fainted and went into collapse. The doctor had her at once transferred in a carriage to Beth Israel Hospital.

On Admission.—Patient was unconscious, extremely anemic and in a state of total collapse; pulse imperceptible at both wrists; heart sounds very faint; respiration slow and gasping; surface of body cold and clammy. Abdomen was greatly distended and fluid wave readily detected. Vaginal examination showed fullness in cul-de-sac, and uterus enlarged, but no intra-uterine pregnancy. I was operating at the time of her admission; I turned my case over to an assistant and took charge of this patient. Her condition was so serious that she was placed with her clothing and shoes right on the operating table; abdomen exposed and disinfected in the usual manner. No anesthesia was used. Laparotomy was started and simultaneously an intravenous saline infusion of 1500 c.c. was given. The peritoneal cavity was found to be full of clotted and fresh blood. Right tube was the seat of rupture in the ampullar portion as well as an abortion and was ligated and removed. (See Fig. 8.) Abdomen closed, no drainage. On regaining consciousness some hours afterward the patient was surprised to find herself in bed and was unaware of everything that transpired since she left her doctor's office in the carriage. Patient made an uninterrupted recovery.

It is my firm belief, and the results obtained by me in the

cases of extreme collapse justify my contention, that no matter how profound the collapse of the patient, the urgent indication is to check the hemorrhage, and if the operation be performed with the ease and rapidity that is possible in expert hands the additional shock will be so slight that it cannot be held responsible for a single death.

I cannot agree with the theoretical reasoning, nor is my experience in accord with the practical deductions of the writers who advocate delaying operation in profound shock.

Thus F. F. Simpson, in *Surgery and Gynecology* for November, 1907, says: "It is my firm conviction that the actual facts do not warrant the conclusion that 70 per cent. or 60 per cent., or even 10 per cent. of those who sustain a rupture of an ectopic gestation, will, of necessity, bleed to death. If this view be correct, then immediate operation should not be done unless all conditions are favorable for a successful issue." And again he says: "Dr. Karl Hartog, of the Landaus' Clinic, tells me that he had made a complete review of the German statistics and finds that no more than 5 per cent. of the victims of ectopic pregnancy die from hemorrhage at the time of rupture."

Now, as regards statistics, it seems to me that the only data that can be relied on are to be obtained from patients in whom the diagnosis has been established at operation; it is obviously impossible to give correct statistics of the number of deaths due to ruptured tubal pregnancy in cases that have not come to operation or autopsy; and it is manifestly unfair to compare the definite and reliable statistics of operative cases with statistics of supposed ruptured tubal pregnancy that have not been confirmed at operation, and are consequently uncertain and incomplete, and moreover they do not include the large number of cases that are necessarily overlooked.

It would be more to the point, if we are to place any reliance on statistics at all, to compare the number of deaths of cases treated by operation with those treated on the "hibernating" plan, where the diagnosis is afterward corroborated by operation. I have never seen a death occur even in the service of other operators, whose cases I had the privilege of following, that could be ascribed in the least to the additional shock of operation. But I certainly have witnessed several deaths in the hands of other operators who accepted the advice to postpone the operation, which, in my opinion, were due entirely to the delay in operating.

Now, when we consider that these cases present such a multitudinous variety as to course and termination; that the hemorrhage may be the result of a perforation no larger than a pin-hole or of a rent the extent of the length of the tube; and that the amount of bleeding will depend on the site and character of the rupture; and moreover when we realize that the shock and depression will often vary with the relative resisting power of the particular individual, we must confess that it is absolutely impossible to say from the signs and symptoms whether a given case is one where the hemorrhage had ceased and will not recur, or is one where the bleeding still continues.

I have noted time and time again that the length of time the patients have been allowed to bleed had more to do with the profoundness of the depression and shock than the amount of blood lost, and also that the ability to react will be influenced more by the duration of the hemorrhage than by the amount.

Patients operated on shortly after rupture has taken place, no matter how profound the shock and profuse the hemorrhage, react within a few hours, while patients operated on after the hemorrhage had continued for some time, even if the amount of blood lost was comparatively slight, were very much slower to respond to stimulation.

If it were not for this observation, which was forcibly brought to my attention in a large number of my cases, I might subscribe to the suggestion to delay the operation until the indication for operation can be determined beyond a question of a doubt. But if we admit for the sake of consideration that only 5 per cent. do die at time of rupture, if not operated on, are we not called upon to make an effort to save their lives also and reduce the fatality to a minimum?

As every case in profound shock operated on by me recovered, and no case was refused the benefit of an operation as long as there was a spark of life left, I can see no sense in waiting with the operation and trusting to chance, when, in so doing, the margin of reserve strength of the patients is gradually diminished, and no possible improvement effected in the percentage of cures.

Robb, in his paper quoted above, advocates delay in operations, and bases his conclusion on a series of twenty cases in whom only five showed "evidences" of shock, and who were treated on the expectant plan and operated on at periods ranging from one to twelve days. He reports one death ten days after operation due to "volvulus and intestinal adhesions,"

and two patients discharged with "adherent pelvic structures." These results, as compared with results of immediate operation, are the best possible refutation of the theory of the expectant plan of treatment.

With the exception of three cases in my series, when I was obliged to employ the vaginal route by request of the patients, and excluding cases of vaginal drainage for pelvic hematocele, the result of an old ruptured tubal pregnancy, and which cases are not embodied in my list, all my patients were operated on abdominally. In many instances, when the patient's condition justified it, I removed the appendix vermiformis, especially when it was adherent to a tube or gravid sac. In ruptured cases I have made it a practice within recent years, to sew up the rent in the tube if it were not destroyed beyond repair, or to excise only the affected portion.

In all abdominal cases the wound was closed without any drainage either from above or through the vagina.

Free blood, and especially clots in the abdominal cavity, were removed by gentle mopping with large damp sponges or rolls of gauze. Special efforts were made to remove all the clots from the peritoneal cavity in view of the fact that they might become encapsulated and infected, but a slight amount of free blood left in the peritoneal cavity will soon be absorbed. Irrigation was never used to wash out the peritoneal cavity.

The abdominal route is, in my opinion, the route par excellence for tubal pregnancy. Reasons:—In cases of extreme urgency the time saved in checking the bleeding by the abdominal route is considerable, for in experienced hands it takes a comparatively shorter time to open the abdomen, to grasp the broad ligament between the fingers or in a clamp, and check the bleeding; then the tube and its contents may be withdrawn from the abdomen, ligated, and removed in the usual manner. By this route inspection of the parts can be more thoroughly accomplished, plastic work when necessary on diseased adnexa or appendectomy can be done with greater ease and dispatch, intestinal adhesions, that could not possibly be reached through the vaginal incision, can receive the proper attention, and there is less risk of leaving behind blood clots, a fetus, or a macerated gestation sac, etc.

By the vaginal route the hemorrhage may not be altogether controlled; frequently fresh bleeding may be started from the

upper portion of the sac or from the parts to which it is adherent. This is especially true of intra-ligamentous pregnancy when the layers of the broad ligament have been dissected up, and the hemorrhage will cease only after the raw surfaces have been covered over by sewing together the torn edges of the parietal peritoneum, a procedure absolutely impossible through the vaginal incision.

The best operators of the day agree that the unruptured and recently ruptured tubal pregnancies should be operated on by the abdominal method, while a few, including Kelly, advocate the vaginal route for old ruptured cases. My experience teaches me that all cases should be operated on abdominally. As I pointed out above, I would reserve for the vaginal incision only cases of pelvic abscess and suppurating hematoma, or hematocele.

Venous Infusion.—A word about venous infusion; the most important life saving measure next to a rapid and skillful operation in this disease is venous infusion. I must confess that it is my honest opinion that without the aid of this truly wonderful means of keeping up the heart's action in these dreadful cases of collapse, many of my cases would have had a different outcome in spite of the opportune operative interference. I know of no condition in surgery where venous infusion plays so important and useful a rôle as in the internal hemorrhage from ruptured tubal pregnancy.

While I employ this measure freely, it is always with a due regard for the indications in individual cases. Infusion may be given before, during, and after operation, according as the heart's action requires it. It is indicated immediately before or at the beginning of the operation when the radial pulse is absent or imperceptible. Although I admit that in doing so fresh bleeding may be started from the exsanguinated vessels, I am sure that the slight risk of additional hemorrhage will be more than counterbalanced by the advantages to be gained in preventing cardiac paralysis while the patient is being prepared for operation. After operation, infusion is given as often as is found necessary so long as the pulse continues too rapid and thready and indicates an insufficient blood volume.

In the series of cases that form the basis of this paper a thorough investigation was made of the pathological condition found in every one and when necessary was supplemented by a microscopical examination.

As the cases were, as a general rule, seen by me before being referred to the hospital, great pains were taken in almost every instance to establish a diagnosis prior to operation. Only very rarely indeed was a case found incidental to the service of the hospitals with which I am connected. Each individual case received, as far as it was possible, a careful and critical study with a view of reconciling the clinical features with the operative findings, so that the deductions presented above represent not so much a collation of facts obtained from charts and records—and I have therefore purposely omitted statistics—but the result of my personal observations of the various phases of the disease, and a résumé of a clinical and operative study of 107 cases.

Tubal pregnancy has the same bearing to gynecology that appendicitis has to general surgery, and when we compare the frequency of each in women of the parturient age, we will find tubal pregnancy responsible for possibly as great a mortality and morbidity as appendicitis, and it is certainly entitled to the same consideration on the part of the general practitioner.

My object in presenting this paper was mainly and chiefly to once more call attention to a condition, which, though thoroughly familiar to all, has not as yet, in my opinion, received the general study it deserves.

I desire to express my obligations to Dr. Meyer Rabinovitz, my adjunct visiting at Beth Israel Hospital for a careful collation of the histories of my series, to Dr. Harry E. Isaacs, former house surgeon of Beth Israel Hospital, for the beautiful preparation and mounting of the specimens, and to Dr. Alfred Braun for artistic work in preparing the photographs of the specimens for illustration.

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MANAGEMENT OF THE PUERPERIUM, FROM A SURGICAL STANDPOINT.*

BY

AUSTIN FLINT, JR., M. D.,

New York.

THE chief duty of the physician in the management of the puerperium is the prevention of infection. This occurs most often during labor, and, judging from my experience in teaching students, surgical uncleanness is most likely to be shown during

* Read before the New York Obstetrical Society, November 12, 1907.

the management of the third stage of labor. After the birth of the child and while waiting for the birth of the placenta, the hands are often contaminated by careless or accidental contact with a variety of articles, and should always be resterilized before delivering the placenta and making the necessary examinations for injuries in the birth canal. I always have an extra pair of rubber gloves which can be used after preparations are made for the repair of lacerations or the treatment of hemorrhage post-partum.

With few exceptions, a hot sterile salt solution or bichloride douche should be given immediately after labor. Aside from the prevention of infection, its use enables us to make a more thorough and satisfactory examination of the vagina and to learn more exactly the extent of injuries of the perineum, vagina, or vestibule. If the douche is given very hot, after the blood clots are washed away, the tissues of the vagina are brought out clearly and distinctly.

Lacerations of the Perineum.—The immediate repair of lacerations, whatever their extent, is the rule, and I think is now most universally adopted by obstetricians.

When a slight tear in the vaginal mucous membrane or fourchette occurs it can be sutured before the birth of the placenta. Twenty-day chromic catgut sutures should be introduced while the patient is still under the influence of an anesthetic, but not tied until after the placenta is expelled. Lacerations and abrasions of the vulva, labia, or vestibule are so common that they should always be looked for. Laceration of the vestibule is usually accompanied by sharp hemorrhage. It is readily controlled by one or two deep sutures, care being taken not to include or injure the urethra.

Lacerations of the perineum proper of whatever degree, should be repaired as soon as possible after labor, according to the well-known principles of secondary operations. There seem to be only two points worthy of special emphasis:

1. Place sutures deeply enough and carry them well out on either side, in order to bring together the edges of the muscles. This can often be best accomplished by burying a heavy plain catgut suture to bring the muscles upwards and towards the median line. The ordinary sutures of chromic gut or silkworm gut then easily catch and hold these deeper structures and give ultimate results that are better.

2. Tie the sutures loosely in order to allow for the subsequent

swelling. Sutures that bring the edges of the tear nicely together will in two or three days cut deeply into the tissues and a poor result follows.

The objections to the performance of an immediate operation are, either, a patient in poor condition from exhaustion after long labor, operative delivery, or a very extensive laceration. In such cases, an operation performed the next day, with skilled assistants, a good light and a proper operating table, gives results that are almost universally good. Hirst believes that a week after labor, when all swelling has subsided, is the most favorable time to operate either for a laceration of the perineum, vagina or cervix.

Lacerations of the Cervix.—The question of the immediate repair of lacerations of the cervix is still under discussion. It is argued that if the perineum should always be repaired, so should the cervix, and for the same reasons. I follow the teachings of the majority of obstetricians who repair the cervix only when lacerations are extensive enough to cause hemorrhage. A great majority of labor cases have lacerations of the cervix which are sometimes quite extensive and we know that most of these undergo a good deal of spontaneous repair. While the immediate operation is usually quite easy to perform, sometimes it is very difficult. The swelling and bruising of the cervical tissues immediately after labor, make the prognosis uncertain. Sutures placed too close together and tied tightly, may interfere with the lochial discharge and cause retention, with temperature and other constitutional symptoms. The difficulty of the technic and the liability of sepsis outweigh the advantages of immediate repair and make the routine performance of this operation inadvisable.

On the other hand, one or two plain catgut sutures placed high in the angle of a torn cervix, is the best means of arresting hemorrhage from this situation and is infinitely more satisfactory than packing, which is so often resorted to.

Tears in the anterior vaginal wall are most often due to projecting blades of forceps, and should always be immediately repaired.

Hirst has called attention to the frequency of "a submucous laceration of the muscles and fascia of the uro-genital trigonum in the anterior sulcus of the vagina," and advises its immediate repair. Further experience is required before formulating any general rules.

Dressings and Binder.—The same principles that govern the application of dressings in any surgical case should be used in the management of the puerperium. Surgical dressings are used to absorb the lochial discharge and to protect the vulva from any possible external infection. They are changed, under aseptic precautions, as often as soiled. Vaginal douches should not be given but the vulva should be irrigated after each evacuation of the bladder when dressings are changed. A catheter should be employed only when the bladder is distended and repeated attempts at evacuation have failed. It is not necessary to go into details, further than to say that absolute cleanliness is essential. The danger of infection in the puerperium is greater than in any other condition that I know.

I still use the binder, believing that it adds materially to the comfort of the patient.

Puerperal hemorrhage, is the name given to a hemorrhage occurring more than twenty-four hours postpartum. When it occurs soon after labor, it is due, almost always, to the retention in utero of fragments of placental tissue or a blood clot. The proper management of these cases is, of course, the removal of any such substance from the uterus. The best procedure is to first make a digital examination of the interior of the uterus. This is followed by a curettage, with a large blunt curette; the placental curette is the best. A sharp cutting curette is positively dangerous even in the hands of the expert and should never be used immediately after labor. When the piece of placental tissue can be separated with the finger and removed, the use of the curette is not necessary. If the uterus contains only clot, this can be broken up by the finger and removed without the aid of the curette. In either case, an intrauterine douche of hot sterile salt solution is then given and the patient put to bed.

Hemorrhages occurring late in the puerperium are usually due to imperfect involution and are often associated with retained portions of placenta or membranes. This is the class of cases where curettage is most valuable and productive of the best results.

The possibility of the existence of chorio-epithelioma must always be borne in mind and scrapings examined microscopically. When the diagnosis is made, immediate hysterectomy is urgently indicated. No other tumor is so rapidly fatal. In a large percentage of reported cases, metastasis had occurred before the real condition was suspected. Tumors (metastases) in the vagina or vulva are particularly significant.

Subinvolution and Displacements.—Perhaps the most important part of the management of the puerperium is the routine practice of making a careful physical examination at the end of the fourth and sixth week. If the uterus is found to be too large, this is the best time for treatment. The results of tampons of boro-glycerine or tannic acid and glycerine used from the fourth to the sixth week, are astonishing. The large flabby uterus is quickly 'reduced' in size. At times the improvement can be noted from one application to another at intervals of only three days. It is rarely necessary to continue treatment for more than two or three weeks. I always use, in addition to the tampons, strychnine and ergotin internally, and hot douches.

Backward displacement of the uterus is very common after labor. It may be suspected in any case where there is a return of the lochia when the woman first begins to sit up, and is often a part of the subinvolution. The diagnosis is easily made by a bimanual examination. The causes are indefinite and its prevention very difficult. I have seen it in cases where the utmost care was taken in every detail. The influence of a tight binder I think has been much exaggerated. The most frequent cause, to my mind, is constipation and consequent straining at stool, to which all postpartum women are subject during the puerperium. The bowels should be carefully regulated by cathartics and if patients are obliged to strain, an enema should be given immediately. Nurses should be instructed in regard to the danger of allowing patients to strain and preparations made so that an enema can be given promptly. A patient should be instructed to lie flat on the abdomen for ten or fifteen minutes at a time at least twice during each twenty-four hours, during the latter part of the puerperium.

A short time ago, I examined a patient four weeks after a normal confinement and found everything in perfect condition. The next day she complained of pain in her back and I found the uterus over backwards and a history of an unusually constipated movement, which immediately preceded the pain.

The treatment, as a rule, is very satisfactory. Briefly outlined: If discovered at the fourth week, a simple replacement and treatment by glycerine tampons for about two weeks. If the displacement does not recur, this is all that is necessary, as with the involution of the uterus, the tendency to the displacement grows less and less. A few minutes in the knee-chest position every day has seemed to me a wise additional precaution.

In cases in which the displacement recurs, or in which it is first discovered six weeks postpartum, the treatment is replacement and a pessary. I now make it an arbitrary rule that a pessary is contraindicated before the sixth week, as interfering with normal involution and not to be compared in value with tampons. The best form of pessary is a simple ring which is easy to introduce and performs its work admirably. It should be worn about two months or a little longer, and then removed tentatively. In about 80 per cent. of my cases, the position of the uterus remained forward after the pessary was removed.

Three or four days after the removal of the pessary, an examination should be made, and again after an interval of a few weeks. If the uterus is found normal in position, the case may be discharged. If the displacement recurs, the use of the pessary must be persisted in for about six months.

I have endeavored to touch on most of the points in the surgical management of postpartum cases, in order to bring out in the discussion the practice of the members of the Society. While there is nothing new that has been brought forward, the details of practice are of great importance from the standpoint of the future health of women who have been through what has been called "merely a physiological process."

34 EAST FIFTY-FOURTH STREET.

CARE OF THE PATIENT IN THE PUERPERIUM.*

BY

FRANKLIN A. DORMAN, M. D.,

New York.

THE successful care of the puerperal patient demands many important considerations, but foremost among these, the selection of a suitable nurse; that is, one with proper personal qualities, combined with the necessary technical training, which I will refer to later. Of the personality of the nurse, much could be said. In general she must be of an even temperament, quiet but cheerful, firm enough to secure her own way in matters of importance, but not too arbitrary. Certain personalities are more suitable for certain patients. It is a fact that in no class of cases is greater tact demanded. Of the few nurses that take obstetric cases entirely seldom is one found that does not fail to give complete satisfaction in some case. I know of such nurses, but they are rare. No more capricious patients can be

* Read before the New York Obstetrical Society, November 12, 1907.

found than the woman in the puerperium. Bearing this in mind, I have made it a rule that the nurse shall not be considered engaged by the patient until the two have met and come to an agreement. I have been obliged to supply an out of town patient with three nurses in rapid succession. A fellow of this Society to my best information sent seven nurses to one of his patients before she felt that she had met her affinity. This is more easily understood when we consider the nervous instability of our patients, the bedridden hours, during which the patient is not absolutely sick, and the numerous opportunities for friction developing over the training and care of the infant.

Of the training of the nurse just a few words. She should have had sufficient hospital training or maternity experience, so as to know what in general is expected of her, a knowledge of the importance of asepsis, and of the significance of variations from the normal. As far as possible, she should know the method of procedure employed by the attending physician, but yet she should be willing to put all responsibility possible up to him.

The nursing of the patient first demands consideration of the time immediately following delivery. For one hour postpartum fairly close supervision of the fundus must be given, with frequent gentle massage. If the fundus becomes soft, more vigorous and continuous massage. According to my experience, however, this is a responsibility which the physician must not share too much with the nurse, or he will sometimes have painful experiences. After this hour, the patient should have some form of abdominal binder applied, and be comfortably adjusted in bed with the privilege of turning from side to side. For any chilliness, hot water bottles or blankets supplied, for thirst small amounts of water or milk. The room must be darkened and absolute quiet as far as possible secured. If the patient's mental tranquility is accomplished, sleep should come quickly. From time to time observations should be made as to the height of the fundus, the amount of flow and the patient's pulse. During the early days there should be temperature taken every four hours when the patient is awake. The vulva pad should be changed when saturated, or at least every four hours. The nurse should sterilize her hands before making the change, and irrigate the parts with 1-5000 bichloride. For at least forty-eight hours the dressing next to the vulva should consist of moist bichloride gauze. The nurse's other duties are those to the child, the carrying out of the special treatments which will be further

brought out in the papers of the evening, and the ordinary care that must be given to every bed patient.

The diet of the patient is for the first forty-eight hours fluid, given because there is usually disinclination for much nourishment, and more can be supplied more easily in this manner. It is also a fact that much less fecal residue accumulates in such a diet, and this makes it possible to defer catharsis for two days. Flatulence on a fluid diet is also less marked. It must be recognized, however, that certain cases, promptly on the termination of labor, seem to feel very hungry, and still others become hungry before the forty-eight hours are passed. Of some of these cases I have been obliged to make exceptions to my usual rule of diet. The third day the bowels must move, and to accomplish this a mild laxative such as ℥iv of citrate of magnesia must usually be supplemented with an enema. A soft diet is now allowed for two days. The next day chicken is allowed, and subsequently red meat once a day, if desired, and, in fact, a general varied diet. The conditions to bear in mind are, the necessity of curtailing fluids if the breasts are excessively engorged, and of adding fluids such as milk and cocoa, if the milk is deficient in amount or quality. Variations in the diet may be demanded because of excessive proteid in the milk. Some patients can eat anything and produce good milk. In others certain articles of diet will provoke indigestion in the child. It must be remembered that too much food or too rich food is just as apt to disorder the puerpera while she is in bed or inactive as any other patient.

Catharsis is necessary for almost every patient and the fluid extract of cascara in dram doses, or from five to ten grains of the solid extract in the tablet form is usually serviceable. To secure the proper effect of these an enema is usually essential. A fair working rule is to order the laxative as a standing order for every night of the day in which the bowels have not operated spontaneously and sufficiently, and an enema every day when a natural movement has not occurred. The saline laxatives are reserved for their assistance in breast depletion. It is sometimes essential for a time to discard the use of laxatives and rely entirely upon enemata, because of the indirect effect upon the child through the mother's milk.

The care of the breasts becomes important at the time of engorgement from the third to the fifth day. Prior to that time it is desirable that the child nurses occasionally, securing the little colos-

trum that is present, and accustoming itself to the nipples. But the nursings must be of short duration, *i. e.*, from three to five minutes, to avoid unnecessary maceration of the nipples. The engorgement of the breasts in most cases involves so much discomfort, that measures must be taken for their relief. The amount of fluids in the diet should be much limited. Brisk saline purgation is desirable, in more marked cases. The heavy breasts should be supported by a breast binder, which must be one that gives even support, without much pressure. The engorged breasts, from which milk does not flow readily, are best treated by massage. The child must now furnish depletion by a full nursing every two hours except for two night feedings. The breast may also be relieved by expression of the milk or by the breast pump but these latter methods must not be long employed, as they have a tendency to prolong the overproduction of milk, by causing an overdemand. Sometimes the discomfort from the breasts is much relieved by the application of ice bags. Usually forty-eight hours after the first filling of the breasts, conditions have become well adjusted. The possible complications to look out for after this time are two; first, a diminution of the milk, and, second, a possible breast infection. To insure proper maintenance of the milk supply, the patient must enjoy mental tranquility. This is the great reason for a nurse of the proper temperament, and for excluding visitors from the sick room during the first two weeks. The diet must furnish a large amount of liquid nourishment. Milk in most cases can be taken in large amounts, either plain, or if distasteful in cocoa, gruels, etc. Lastly as the patient gets about she must be guarded against overexertion.

Breast infections practically never appear before the seventh day. The eighth day of the puerperium seems to be an especially vulnerable time. It is surprising how often the beginning of such an infection is overlooked by the average practitioner, and there is no condition in which attention to the beginnings is more important. The prompter we begin treatment in these cases, the surer we may be of cure. The diagnosis is made by the evidence of inflammation in one segment of one breast, in local throbbing pain, and sensitiveness to pressure, swelling and redness, coupled with fever following a chill, or chilliness. The treatment consists in prompt application of an ice bag, massage, and expression of milk every two hours, and complete emptying of the breast every two hours by means of the breast

pump. A liberal dose of magnesium sulphate is given, and diet from which the bulk of fluid is eliminated. If the nipple is cracked, a wet dressing of alumina acetate is applied. This treatment is actively continued, night and day, until the symptoms of infection have disappeared. In normal cases the temperature in the next twenty-four hours drops to normal. If another chill or rise of temperature occurs, one of two things has happened, the infection of another segment of the breast, or the formation of pus. Even in these cases, some superficial abscesses may be massaged out, but the surgical treatment must not be long delayed.

Cracked or eroded nipples are not infrequently the source of much discomfort to the nursing mother. Of their treatment, I would note the importance of brief nursing until the milk comes in, and then if very painful the temporary use of the nipple shield, instructing the nurse never to offer it to the child until it has first been filled with mother's milk or sugar water. The cracks in the nipples may be stimulated by daily applications of 8 per cent. AgNO_3 , or compresses of alcohol or by painting the nipples with the glycerite of tannin. In severe cases with bleeding, nursing must be omitted for a day or so, and the milk secured by expression. The nipple for the first two weeks of lactation should always have a sterile cloth protective dressing, and be anointed with sterile vaseline.

The drying of the milk is easily accomplished if the following instructions are carried out. The breasts are to be bandaged, when empty, with a bandage that will give firm, even pressure. The nipples are to be carefully disinfected, then covered with sterile cotton. The patient is now put on a dry diet, with a daily morning saline cathartic. The bandage is to be kept so that there is firm continuous pressure, and therefore tightened as the breasts shrink. On no account is the bandage to be removed and the breasts massaged. I have never seen a case in which such a procedure proved necessary. For pain, ice bags are used locally, and a little codeine. After one week a new bandage may be applied if milk continues in the breast, but this will be superfluous in a few days more.

TREATMENT OF THE PUERPERIUM.*

BY

SIMON MARX, M. D.,

New York.

THE care of the individual in the puerperal state is the treatment of the woman and not the patient. If we are to look upon the antecedent condition, pregnancy, or the parturient act, as one that is normal, then with equal right are we to consider the puerperal condition normal. The normal calls for therapeutic measures only to correct certain exaggerated physiologic conditions which border so closely upon the pathological that the line of demarcation cannot always be drawn. By means at our command we can always correct those conditions that may, unless corrected, lead to pathologic states; make the woman more comfortable and all in all the convalescence smoother.

We are nihilistic in our general medical treatment of the normal puerpera. With certain modifications, we treat the woman along strictly normal lines.

The mother is made as comfortable as possible. Unless she asks for the abdominal binder none is ever put on, for the support that this ancient fabric gives the patient is purely imaginative and it at best makes pressure where none is wanted. The binder is only allowed in those women with flabby abdomens who need unqualified support and feel better for its presence.

In the treatment of laceration of the perineum no forced posture is required, the movements of the limbs are not hindered by the use of the knee binder. In the event of irritation of the parts occurring, as shown by the presence of puffiness and edema, continuous application of hot bichloride is made. If the patient can void urine the catheter is never used whether there be lacerations or not, but the nurse is instructed to carefully irrigate the vulva each time with a sterile solution.

It has been my custom for many years to allow the mother a most liberal diet, even immediately after labor. I have never seen any ill results from this step though I realize that it is contrary to time honored teaching. But my results have always been the same, undisturbed convalescence and a better getting up. The bowels as a rule have moved earlier and normally and in spite

*Read before the New York Obstetrical Society, November 12, 1907.

of sharp criticism, I still maintain that the recently delivered woman has need of sustaining food instead of the slops that our grand-mothers were given. If sepsis arises it is not due to full feeding but to filth. If there be a contraindication to a full diet it is withheld, as in a woman with toxemia or acutely anemic from hemorrhage. These must be treated along the usual lines that fit such cases. In short, in the normal cases, liberal diet and in the abnormal ones restricted according to the individual requirements. I seldom allow the administration of milk in any form because of the severe intestinal disturbances that have frequently arisen after its use. In the severe forms of laceration I give soups and broth exclusively.

For many years it has been my custom to administer small doses of ergot throughout the ten days of the puerperium. I find that with such treatment involution is quicker, there is less lochia and from keeping the uterus well contracted there is less disposition to septic disturbance. Where there is a contraindication to its use, as shown by the occurrence of severe after-pains a short time after it is given, or where the stomach rebels, or where by its general effect on the vaso-motors it causes an artificial anemia as shown by dizziness, cold, clammy skin and weak pulse—here we use one or other of the alternates, strychnine or fair doses of quinine at regular intervals. After-pains are in a majority of cases to be considered as normal, especially when they occur in a multiparous woman, less often do they present themselves in the primipara. In most cases they can be readily controlled by keeping the uterus as empty as possible by a careful Credé performed every day, and by placing the patient in the semi-inclined position for purposes of drainage. Medically I find nothing better than the administration of 10 grains of chloral every hour until relief is afforded. Opium and its derivatives are of value but for many reasons are to be withheld. The most useful drug of this class is codeine in doses of from one to two grains by the mouth or the rectum. Gelsemium, and bromides are of value where other measures fail. If a pathologic condition is at the bottom of the trouble, and especially if general disturbances arise, the case assumes another aspect and must be treated according to principles foreign to this paper.

With the giving of a free diet we find that the bowels usually move at the end of twenty-four hours without artificial means—but if this does not happen then the time honored castor oil is given on

the evening of the second day. Except with a complete laceration into the rectum this is our invariable rule. With extensive lesions of the perineum, we move the bowels on the morning of the fifth day, giving the evening before a retained enema of sterile olive oil.

We allow the parturient to assume any position that is the most comfortable for her, the presence of lacerations being no contraindication to such movements. We gradually allow her to assume the semi-inclined upright position, favoring this as early as the third day for purposes of drainage. Especially do we wish to avoid the enforced dorsal posture because of its deleterious effect on posterior displacements of the uterus. We are much more strict in allowing women out of bed and the rule is to keep them in bed until the lochia has become white. To get women up on the second to the fifth day is as senseless as dangerous. On two occasions I have seen women apparently normal suddenly die of a pulmonary embolus on the seventh day.

Presuming, as we must in the light of modern scientific experience that the normal vagina is a relatively sterile organ, it has always appeared to me that douches at any time before or after labor are of no value. Douching a sterile organ cannot make it any cleaner, but by a flaw in our antiseptic methods may invite sepsis. I am speaking purely of the normal organs. For esthetic and cleansing purposes my cases are douched at the end of the first week if the lochia becomes disagreeable to the patient. For the same reason a full bath is ordered at the end of the second week.

The question of the treatment of the results of hemorrhage while not properly coming within the scope of this paper, has been assigned to me. Their prevention is of the first importance. Knowledge of their source and differentiation is of equal importance. Locate the source and treat locally as the case requires. The anemias resultant from these bleedings are treated along the well-known lines of hemorrhage in general by perfect bodily rest, if necessary postural treatment; the administration of copious fluid draughts by the mouth, or salines, with or without whiskey or coffee, by the rectum. In the graver cases intravenous transfusion or subdermal infusion, and the usual heart tonics may be employed. Great care must be exercised in their administration not to overstimulate. Strychnine, caffeine and nitroglycerine are our mainstays.

The time honored advice to faithfully rub the nipples for

months to prepare them for lactation is to my mind the most prolific cause for complications that may arise in the breasts after delivery. Under my instruction the nipples are never interfered with unless they are distinctly painful, eroded or tender. They are protected from external pressure, as from corsets, by a large wad of cotton and only if local conditions demand are they treated at all. I generally advise in the last months the night and morning application of a 20 to 30 per cent. solution of ichthyol. We can do much to influence the milk secretion one way or the other. The breasts must be studied. In the defective breast with no milk all the remedies at our command cannot reconstruct milk ducts where none are present. I warn against stimulating treatment in these cases for the only result will be cracked nipples and a probable infective mastitis. But where there is a scanty flow of milk we can do much. Plenty of good nutritious food in the form of cereals and cream and malt are of the greatest value. Very good results have been obtained by the use of the fluid extract of gallega (*nutrolactis*) in half ounce doses three or four times a day or the use of a powdered extract from the seed of the cotton plant (*laktagol*) in doses of two to four drams per day. Either is supposed to have a specific galactagogue action and I have found the latter the more valuable. The action of these drugs is materially enhanced by the constant local application of pure castor oil or by the use of a poultice made of the leaves of the castor plant.

The condition called galactorrhœa, while not dangerous to life, may lead to the gradual and positive undermining of the health of the mother. While not frequent, excessive milk secretion does occur and from its deteriorating influence must be looked upon as a pathologic condition. Diminishing the amount of highly stimulating food but sustaining the strength of the woman will do much; but drugs are important. The regular administration of antipyrine, iodide of potash and atropine or belladonna, together with the use locally of atropine and glycerine (atropine grains 2 to 8 ounces of glycerine) or the application of the ordinary belladonna plaster to the whole breast encased in a firm maternity binder of the Murphy type give excellent results.

I cannot finish without referring to a topic which I must call by its time honored name of milk fever. I know of no better or more suitable or comprehensive name than this. I use it as a term of convenience for the condition that arises on the second or third day accompanied by a feeling of general malaise. sub-

febrile temperature and fullness and congestion of both breasts. We all realize that this may mean an infection but none of us want to admit to the patient that an infection has arisen, since by simple rest all the symptoms usually clear up. Here the administration of a large dose of a saline aperient is of great importance; a firm breast binder should be applied and the arms snugly bound to the sides. Where the complication is an aggravated one with high temperature as will occur even without the presence of a true mastitis, the constant application of the ice bag and further complete rest will usually end the trouble. We have never countenanced local trauma by even the gentlest massage. What we are looking for is absolute physiologic rest for we have seen aggravated cases of mastitis presumably arise from treatment other than physiologic rest.

947 MADISON AVENUE.

IN MEMORIAM.

WILLIAM H. S. WOOD.

BORN APRIL 13, 1840—DIED DECEMBER 11, 1907.

WILLIAM H. S. WOOD, the senior member of the firm of William Wood and Company, was the son of William and the grandson of Samuel Wood, the founder one hundred and three years ago of the publishing house.

He was born in New York City in 1840, graduated from Haverford College in 1863, and shortly after was taken into partnership by his father, the style William Wood and Company being then adopted.

From the time of his admission to the firm, Mr. Wood advocated specialization in the direction of medical publications and proceeded with his characteristic energy and judgment to develop the business in this line. In 1865, he conceived the idea of starting a medical journal to be conducted in the interests of the medical profession in America and the first number of the *Medical Record* appeared in March, 1866. It was at first published semi-monthly, but soon changed to a weekly, and in its pages is a history of medicine in America for the past forty-two years. Dr. Shrady had the honor of being its editor for nearly thirty-eight years.

This JOURNAL originally founded by Dr. Benjamin F. Dawson in 1869, has been published by the house for many years, at first under the editorship of Dr. Paul F. Mundé, and, since his retirement in 1891, of its present editor.

Mr. Wood remained the head of the house until his death but

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WILLIAM H. S. WOOD.

for the last four years devoted his energies mainly to the management of the Bowery Savings Bank, of which he had been a trustee since 1872. In 1903, he was elected president of the bank. Under his guidance its influence and prestige increased until in July, of this year, its deposits reached the enormous sum of over \$100,000,000.

In 1865 Mr. Wood married Miss Emma Congdon, of Providence, R. I., who died in 1896. In January, 1907, he married Mrs. Cornelia Elliot of Baltimore. He is survived by the widow, three sons, and a daughter.

Mr. Wood was a director of the Young Men's Christian Association for seven years, and a manager of the American Bible Society for twelve years. He was a life member of the New York Historical Society, the American Pomological Society, and the New York Horticultural Society; Fellow of the American Geographical Society; benefactor of the New York Academy of Medicine; member of the St. Nicholas Society, of the New York Society for the Suppression of Vice, the Chamber of Commerce, the New York Academy of Sciences, the New York Zoological Society, the Clinton Hall Association, an incorporator of the New York Botanical Society and member of the Union League, Grolier, Seawanaka Yacht, and Indian Harbor Yacht Clubs.

He was a member of the Orthodox Society of Friends. His hobby was horticulture and he has written several volumes on pomology and allied subjects.

A man of positive individuality and iron will, uncompromising in the essential duties of life, pushing always onward, never faltering from the course that he was convinced was right, he was yet a true and loyal friend, in times of other's sorrow as tender of heart as a woman, ready to extend a helping hand to those who faltered, and to those who knew him well showing a lovable nature and warm human sympathy.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of November 12, 1907.

The President, E. B. CRAGIN, M. D., in the Chair.

DR. ABRAM BROTHERS presented the specimen from a case of
ABDOMINAL PREGNANCY WITH FIBROID UTERUS.

Mrs. G. S., age forty-four, married fifteen years and never pregnant. Menses always regular. Skipped her periods for three and one-half months and presented all of the usual subjective symptoms of pregnancy (nausea, vomiting, etc.). Two

weeks ago noticed bloody discharges from the vagina and has spotted on two occasions since that time. Has been suffering from bearing-down pains in the abdomen and back. At no time did she faint. She has noticed her abdomen to be increasing in size.

When first seen she was walking about her room in usual house attire. Breasts were enlarged and presented the characteristic appearances of pregnancy, including the presence of colostrum. The cervix was soft. Abdominally an irregular mass reaching to the umbilicus and extending higher up on the right side was vaguely mapped out. Per vaginam, anteriorly, a hard, oblong egg-shaped mass was felt, suggesting either a fibroid tumor or enlarged displaced ovary. From the cervical canal an elongated polyp protruded. Behind the uterus a boggy mass was felt suggestive of a cystic tumor, encapsulated blood, or the body of a retroflexed pregnant uterus.

The diagnosis of pregnancy was clear. Whether the bleeding was due to a cervical polyp in the case of a pregnancy in a retroflexed pregnant uterus and complicated by an intraperitoneal cystic tumor in Douglas, or whether we were dealing with an unusual form of ectopic gestation complicated by a fibroid uterus was not so clear. The indication for an abdominal incision seemed to me absolutely indicated.

On section the abdominal cavity was found to be full of black blood and clots. A fetus of about three and one-half months' development was discovered among the coils of intestine. In its delivery the umbilical end was torn. The placenta was found attached to the peritoneum of Douglas' sac and shelled out. A ruptured tube was located on the left side. The uterus was enlarged and, besides being the seat of fibroids, it felt soft and boggy. Panhysterectomy was done and drainage established above and below. The patient has made an uneventful recovery.

The specimens show a fetus and placenta of about three and one-half months' development. The left tubal rupture indicates that, beginning as an ectopic gestation, the growth of the embryo continued uninterrupted in the form of an abdominal pregnancy. The uterus is of moderate size, and shows several nodules of various size. The interior is lined by a decidua. When the uterus was opened the possibility of an intrauterine gestation complicating the ectopic passed through our minds because of the extreme softness of the uterine wall. The cervical polyp was torn off by the assistant during the process of cleansing the vaginal canal.

DR. BROTHERS also presented the specimen from a case of

TUBAL GESTATION AND OVARIAN HEMATOMA (OVARIAN PREGNANCY?).

On Oct. 21, 1907, I was requested to examine a woman of twenty-nine who had been sent to the hospital to be curetted

for uterine bleeding. She gave a vague history of having had a miscarriage at some time during the preceding two months. There was no history of severe cramps or fainting spells. Nothing more was elicited than some irregular bleeding from the vagina.

On vaginal examination a tumor, irregularly doughy and hard was felt in the left pelvis in close and intimate contact with the uterus. There was no pelvic hematocele. My house-surgeon jokingly requested me not to hold him responsible for the diagnosis of ectopic gestation which I ventured to suggest.

The uterus was subjected to a preliminary examination. Its cavity was enlarged so that a sound passed in easily to a depth of three and one-half inches. The uterine interior was empty and the curette brought away nothing. Abdominal inspection revealed a bulging mass the size of a man's fist over the left Poupart's ligament.

A median laparotomy was done. At first no free blood was seen. Adhesions of omentum and intestine were gently separated and the large left tubal mass was removed intact. On the right side the appendix vermiformis was recognized attached to a swollen right Fallopian tube and beneath this an enlarged ovary with a protruding clot was seen. The appendix, tube and ovary were removed in the usual manner and the abdomen closed.

The left tumor proved to be a large size mole in which the ovum and space between it and tube wall, as a result of hemorrhages, were converted into a large solid clot. The right ovary suggested the possibility of an ovarian pregnancy which, however, has not been confirmed after a rapid examination by the hospital pathologist. It is our intention to have a large number of sections made in order to determine this point definitely. The right tube contained a little sanguineous liquid and was intimately adherent to the ovary.

DISCUSSION.

DR. GEORGE GRAY WARD, JR.—I believe I understood the doctor to say that, in the first case, he drained above and below. I should like to ask him what the indications were for draining above.

DR. HERMAN J. BOLDT.—With regard to the appearance of the uterus in ectopic gestation when the period of gestation has advanced, frequently one gets the impression that it is at the same time complicated with an intrauterine pregnancy. I have been occasionally misled into believing that I was dealing with a double gestation.

With regard to the continuation of the growth of the ovum, it shows that the embedding of the fertilized ovum must have taken place immediately and the growth continued.

DR. ABRAM BROTHERS.—The question of Dr. Ward's is a fair one. The only answer I can give is that where there are quan-

tities of blood in the peritoneum and tissues left which may lead to suppuration, free drainage is indicated, because often parts of the remaining placental tissue, as well as the clots, are not entirely removed. Ordinarily in ectopic gestation when drainage is indicated, I never drain from below but use a Morris drain from above. This was removed in a few days in the present case.

DR. EDWIN B. CRAGIN.—I should like an expression of opinion as to the wisdom of draining ectopics, whether to drain or not.

DR. HERMAN J. BOLDT.—I can say that I have not drained the abdomen in instances of ectopic gestation for a long time. I think these patients do better without drainage. If you get rid of the large masses of blood clots, that is all that is required. The remaining blood is readily absorbed and no drainage is necessary. The peritoneum has become more or less accustomed to irritation and can take care of itself, and it does not matter whether there is drainage or not.

DR. RALPH WALDO.—In a long series of ectopic operations and abdominal sections, there was but one case in which drainage was used, and in this instance there was a large mass of blood that had been infected by the colon bacillus. Except possibly where there is a lot of blood or a number of adhesions I never have seen any bad results from not draining.

DR. EDWIN B. CRAGIN.—I should like to ask the members of the Society if they do not find that by draining in ectopic gestation they are more apt to have infection follow from the fact that the blood that is left makes a good culture medium.

DR. H. N. VINEBERG.—It seems to me the proper solution of the question is really whether there is a raw oozing surface. Where that is found I should pack and not drain. I do not care how large a quantity of blood is in the peritoneal cavity, I should not think of draining on that account. But in those cases where there is a large raw surface, or adherent placenta, or an old hematocele with thick walls, the enucleation of which leaves large and raw surfaces, I would employ packing with the end of the gauze passing through Douglas' pouch into the vagina.

I saw one case last summer where a fairly large sized raw area was caused and it was oozing. The woman, about the tenth day, after an apparently good recovery, developed some temperature and some bogginess posterior to the uterus. An incision let out some purulent blood. This did not interfere with her recovery in any way but this was a case in which a mistake was made in not packing off the area at the time of the operation and avoiding the trouble afterwards.

I remember another case in which there was extensive adhesion and a drain was used. The woman was in bad condition; there was a large raw surface which I was able to stop by the use of the Mikulicz drain.

In a very desperate one, with an enormous quantity of blood in the peritoneal cavity and very extensive adhesions, I used the

actual Mikulicz packing through the abdominal wound and the patient made a good recovery after passing through a rather stormy period for the first three or four days after the operation.

DR. CHARLES JEWETT.—I have a case now under my care of the kind Dr. Vineberg alludes to. She had a subligamentous pregnancy, with a large blood collection behind the uterus. She was operated upon by the abdominal route and a considerable oozing surface remained in the cul-de-sac. A cigarette drain was left, into the vagina. There was a free discharge of blood for the first few hours and there would have been trouble if drainage had not been used.

DR. ABRAM BROTHERS.—I agree with the speakers, that the wound should be closed without drainage. I do not ordinarily drain unless there is some unusual occasion. In this case there was an adherent placenta which was gotten out in two pieces. Unless there is actual suppuration I close without drainage. I have had, however, a similar experience to that of Dr. Vineberg, where I closed without drainage and was obliged to reopen two weeks later because of suppurating blood clots. While the rule should be to close without drainage there are exceptions which the intelligent individual operator must determine.

DR. CHARLES JEWETT presented a specimen of

ECTOPIC GESTATION.

The patient was the wife of a physician, had been married ten years, but was never pregnant before. Her last menses were on April 8, 1907. She had some bloody uterine discharge May sixteenth. Perfectly well till June. First attack of pain June first during a visit to the South. Severe pain till June tenth. In bed till July second. Reached home July tenth after eight days on steamer. Diagnosis of right tubal gestation. Operation July thirteenth. Very little free blood in peritoneum. Pregnancy in ampulla of right tube; tumor globular; fruit sac 5 cm. in diameter, unbroken. Appendix adherent to tube.

An embryo of three or four weeks' growth was found in the sac—yet the pregnancy had been carried three months and five days.

The gelatin mount of the tumor, cut in two sections, shows the amnion and the embryo well preserved.

DR. H. J. BOLDT presented an unusually

LARGE BARTHOLINIAN GLAND CYST.

The specimen was of interest because of its large size. The tumor was so large that it made walking very inconvenient; likewise sitting. Proper coitus was impossible. The dimensions of the tumor in situ were three and one-half by five inches, by far the largest cyst that had been seen by Dr. Boldt. The contents seemed originally to have been somewhat sanguineous, because they were thick and contained many blood corpuscles, in addition to leukocytes.

DR. BOLDT also presented a

FOREIGN BODY REMOVED FROM ABDOMINAL CAVITY.

The patient from whose abdominal cavity the specimen was removed this morning, was operated upon in a western city early last spring. The abdominal wound did not completely close, but a fistulous tract was left which constantly discharged pus. She was discharged after six weeks' stay in the hospital, and told that the fistula would eventually close, and was then locally treated by the operator from that time until she came to this city. She was examined by me yesterday morning, and a tumor was felt about the size of an orange of medium size, to the right of the median line and on a line with the umbilicus.

The sinus in the scar could be followed for about two inches and had a direction towards the pelvis; it gave exit to thin pus. Behind the uterus and to the right was a cystic mass about two inches in diameter. On the left side the adnexa had been removed, and there were numerous nodules of inflammatory exudate. After opening the abdomen and separation of intestinal adhesions the cystic mass from behind the uterus, which consisted of encapsulated gelatinous material, the result of inflammation, was removed. The firmly adherent ovary, which was cystic and attached to the floor of the pelvis, was still in connection with the ovarian ligament, although the greater part of the Fallopian tube had been removed by the previous operator. It was grafted into the cornu of the uterus, after the interstitial part of the tube had been exsected. After further exploration the source of the pus was found to come from the tumor previously felt in the abdomen and which was diagnosed as an intraabdominal abscess. The pus was very offensive. After much technical difficulty the conglomeration of intestinal adhesions was more or less unraveled, so that one could approach the cavity which gave exit to the pus. Then a gauze bandage or rather a long piece of gauze roll was discovered and extracted. The cavity was thoroughly mopped out with a 1-500 bichloride of mercury solution, and then with water and left to take care of itself. There being much oozing in the pelvis, the cul-de-sac was opened, and a drain was put into the pelvis which is to be removed after twenty-four hours.

Although the operation was one of unusual technical difficulty, because of the adhesions, it is the intention to have the woman sitting out of bed within twenty-four hours.

DISCUSSION.

DR. HOWARD C. TAYLOR.—I had an instance last summer which showed the difficulty of being sure that all pads are out of the abdominal cavity. It is my custom to have a tape attached to each pad and clamped, and the pads counted before and after use. Once this last summer the nurse reported at the end of the operation one pad to be missing. After I had searched the abdomen she told me she had made a mistake and

that the pads were all out. I closed the abdomen and placed the patient in bed. Again several hours later I was told by the nurse that she had made a mistake and that a pad was still missing. I do not believe the pad was in that woman's abdomen at all. Whether it really is or not, I do not know. She made a perfect recovery, and from the time of operation she had no special reaction, and the wound did nicely.

DR. ANDREW F. CURRIER.—I recall an instance of one year ago in which the pads were supposed to be properly counted. The abdomen was closed when the nurse informed me that one of the pads was missing. The patient was not in good condition and I hesitated about reopening her. But the nurse was so certain about the missing pad that I reopened the wound and searched every portion of the abdominal cavity but was unable to find anything. The next morning the pad was found under an article of furniture.

DR. ROBERT A. MURRAY.—A physician was operated on this summer for appendicitis and a pad was taken from him some weeks afterwards. This man accompanied me on a trip to Nova Scotia and for nine weeks he carried that pad in his abdomen. No trouble resulted. In operating I never rely upon a nurse in caring for the pads, but upon the first assistant. I do not think we are justified in relying upon the nurse. The surgeon who is operating is really negligible. Often the nurse would lose count of the pads because the gauze was cut. Frequently other operations are going on the same day and they get mixed in their counts. There is not the same concentration because not the same responsibility. Therefore, I place the responsibility upon the first assistant. He should know when one is introduced and when it is removed and should be able to absolutely keep count. Whenever one is not sure and opens the abdomen to search for a pad he takes away, in many cases, the chances for recovery. One has no right to do it; it shows he has been negligent. A doctor in this city who used to operate out of town told me that he had seen three cases in one year where pads had been left in the abdomen. This resulted because no one was responsible for the care of the pads. When the abdomen is closed it is so easy to say, "it is easy to make a mistake and drop the pad on the floor." The surgeon is negligible and the law so holds it.

DR. GEORGE GRAY WARD, JR.—I would suggest to the gentlemen that they give up the use of pads, and instead use a long gauze roll like a roller bandage. The gauze is folded in several layers to a width of five inches and is about three yards long, and is then rolled like a bandage. As much of this is unrolled as is necessary and the intestines packed away with it. An artery clamp is put on to the remainder of the roll. By this method there are no pads to count and as you can be sure of never leaving anything behind, it gives one peace of mind and solves the problem.

DR. RALPH WALDO.—A number of years ago the late Dr. Charles Carroll Lee insisted upon attaching a pair of forceps to every gauze bandage and pad placed in the abdomen, but never allowing the pair of forceps to get into the abdomen. Therefore there would be many pairs of forceps outside but never inside the abdomen. In this way he never left gauze in the abdomen; that insures against it.

DR. C. A. VON RAMDOHR.—At the St. Mark's Hospital heavy forceps are attached to each and every pad placed in the abdomen. It is impossible to leave a piece of gauze in the abdomen unless the forceps slips.

DR. R. H. POMEROY.—At the Brooklyn Hospital each pad is provided with a loop of strong tape to which a heavy metal harness ring is attached. There is no risk of this ring being confused with other instruments or being accidentally detached—as may happen when clamps are used on the pads. We find this a perfectly satisfactory means of avoiding such accidents as have been described.

DR. HERMAN J. BOLDT.—I believe that in this particular instance the cause of the suppuration at the operation is not absolutely clear. That is one point that I wished to call attention to.

So far as leaving foreign bodies in the abdomen is concerned I do not care what precautions are taken, it may occur in the hands of the most careful men. What Dr. Ward alluded to at the Post-Graduate Hospital I believe to be the best precaution. Yet at the same time when one gets a complicated case, with much hemorrhage, and pads are introduced to clear the field, it is possible to leave something behind.

DR. HOWARD C. TAYLOR, M.D., reported a case of

SARCOMA OF THE UTERUS.

The history of this case is as follows: G. W., single, aged twenty-four years, no children nor miscarriages, menstruation during the past eighteen months had been every four weeks but from twelve to fourteen days in duration, and very profuse; there was some pain in the back and lower abdomen during the menstruation but none at other times. The functions of the bowels and bladder were normal.

On examination the uterus was found to be retroverted and to contain a tumor supposed to be a small fibroid; nothing was found in the appendages. On July 17, I curetted the uterus, removed the tumor and suspended the uterus. The tumor was in the anterior wall of the uterus, and was about an inch and a half in diameter. In removing it, the cavity of the uterus was opened. The tumor was examined for me by Dr. Ewing and pronounced by him to be a myosarcoma. In regard to subsequent treatment of the case, I talked with Dr. Ewing and he advised against a hysterectomy until there were symptoms such as more bleeding or an increase in the size of the uterus.

This did not coincide with my opinion clinically and I removed the uterus completely, together with the appendages on Aug. 26, 1907.

A careful examination of the uterus failed to reveal any sarcomatous foci. The point of special interest in the case is whether it was necessary to remove the uterus or not. Personally I have had two other cases in each of which I removed a tumor, which I supposed to be a fibroid but which proved to be a sarcoma, leaving the uterus. In each of these cases the uterus after removal was found to contain sarcomatous areas. My experience with these two cases, my belief in the impossibility of recognizing sufficiently early any increase in the size of the uterus and my attitude toward sarcoma in general were my reasons for removing the uterus.

DISCUSSION.

DR. H. N. VINEBERG.—I should like to ask if it was a round or a spindle celled sarcoma.

DR. TAYLOR.—I do not know that I can answer that question. Dr. Ewing reported it as a myosarcoma merely.

DR. EDWIN B. CRAGIN.—I should like to ask the members what they would do under the circumstances.

DR. BOLDT.—Take out the uterus.

DR. CRAGIN.—That is the opinion most of us hold.

DR. F. A. DORMAN.—At the Sloane Maternity a negress was admitted at term with a small angioma of the upper lip and upper jaw, involving the gums. A section of the growth was sent to the laboratory and, the report pronouncing it to be a malignant form of sarcoma, she was urged to go into the hospital for operation. This she declined. A year and a half later she returned to the hospital and there was no change in the growth. Sometimes the diagnosis is not confirmed by future events.

DR. H. N. VINEBERG.—As the Italian proverb says "every ditch is full of water after a rain" and it is so easy to be wise after the event. Still I think in a similar case if I know the growth to have been circumscribed within a well-defined capsule, I should have been influenced by such advice as Dr. Ewing gave, *i. e.*, to watch the patient carefully and to intervene only on evidence of a recurrence of the growth. I should be the more inclined to do this, knowing that many fibroid growths of the uterus when carefully examined with the microscope show sarcomatous elements and nevertheless recurrences in such cases are very rare. I think the Society is indebted to Dr. Taylor for presenting a specimen opening up such a point of interest.

DR. ROBERT A. MURRAY.—I think that we are frequently guided by the pathologist's findings in the laboratory where clinically we would think and do differently. I had a case to illustrate that point in this city where sections of a tumor were submitted to different pathologists and where I received differ-

ent reports as to its character. Not only that but I have seen cases that have been most carefully examined reported differently, and I have found that these different reports depend upon how the pathologist makes the examination. In one case a uterus was taken out in which I figured there were eight or nine fibroids. The patient was forty-eight years old and had been flooding; she had been curetted to stop the bleeding. A curious thing was shown in the examination. It was only after ten sections had been made that we could find one that showed carcinoma. I took the uterus out. In this case there were many fibroids, more than nine, and the uterus was not large. The uterus was removed per vaginam. In it were cancerous changes at the junction between the cervix and the body. If I had done a supravaginal amputation I would have left in infected portions. Out of nine sections made there was only one that showed commencing carcinoma. This verifies the fact that unless a number of sections are made a diagnosis is far from being absolute. There is another thing; where there is a fibroid in the uterus, there is granulation tissue and unless we are careful it will be pronounced sarcomatous. Sections were sent to Carnegie Laboratory and to Johns Hopkins; one answered that if he had not known where the sections came from he would have pronounced it sarcomatous.

DR. W. S. STONE.—An important lesson to be learned from this is that every single specimen, and all that is removed, must be examined carefully pathologically. I do not believe that every man in this room would have such a fibroid as innocent as this examined. I think in time these encapsulated fibroid tumors become suspicious and in time will show malignant disease.

DR. HOWARD C. TAYLOR.—In regard to Dr. Vineberg's statement as to the possibility of a mistake in diagnosis in this case, the examination was made by Dr. James Ewing. Dr. Ewing does not find sarcomatous degeneration of many fibroids, and he has seen in his large experience only a few cases. Here is a case in which he stated positively the tumor to be sarcoma. If the tumor was a sarcoma, whether it was round celled or spindle celled, the only thing in my judgment to do was to remove the uterus.

Papers were read on

THE MANAGEMENT OF THE PUERPERIUM.*

By DRS. FLINT, DORMAN AND MARX.

DISCUSSION.

DR. C. A. VON RAMDOHR.—I believe the more the nipple is handled during pregnancy and before delivery, the more it is rubbed with alcohol, the harder it will become.

I object to reintroducing the term "milk fever." We have

* See original articles, pages 94, 99, 104.

passed that. If there is an infection of the breast, it is an infection introduced from outside. It is a sepsis pure and simple. There is no milk fever. There is an absorption fever and this has nothing to do with the breasts.

If a laceration of the cervix, deep enough to cause severe hemorrhage, follows delivery, it should be sewn immediately.

DR. J. CLIFTON EDGAR.—I am glad one of the speakers spoke of the nurse and patient; I make it a rule to have the patient meet the nurse before her confinement. The best of obstetric nurses in three days' time may not be on speaking terms with the patient. When introduced beforehand it makes the case go smoother.

I still use the abdominal binder; I see no reason for doing away with it. I know it adds to the patient's comfort; it gives her a feeling of security and well-being not to be had otherwise. As to the argument that the binder causes displacement this is impossible in the first week. It is only called for a few days following labor.

I am inclined to move the bowels at the end of forty-eight hours. Flatulence and discomfort are lessened by so doing. I am particularly anxious that they should be moved in forty-eight hours.

In regard to the diet, I believe in giving a low or a semi-fluid diet. This adds to the comfort of the patient and lessens the flatulence. These patients do not need a proteid diet.

With regard to prophylaxis of the nipples, in the last four or five weeks of pregnancy I use something to harden them, such as an alcoholic solution to which is added a few drops of castor oil, or the compound spirits of lavender; this gets the nipples accustomed to manipulation three or four weeks prior to labor.

In regard to a swollen breast, I like heat massage. Take flannel wrung out of hot water, as hot as the nurse can stand it. In cases of irritable nipples the practice was at Bellevue Hospital and on the Island to use on them castor oil and bismuth; it was a standard stock preparation, and has been used at Bellevue Hospital since the early nineties, and also on the Island.

Attention to the bladder is most important and I have the fear of the catheter the speaker referred to. I take a moderate risk and allow the patient to use the commode or vessel in bed but with due precautions at the end of forty-eight hours. The patient does not get up before the third day.

I still use ergot postpartum. I give three doses; one at the end of the third stage, and two more at four hour intervals.

I wish the speakers had said more in regard to the time for getting up after labor. We hear much about this after gynecological work but these two are not to be compared. If you remove a fibroid the case in a few hours is not a pathological one. But midwifery cases border on the pathological for days or weeks. These two classes of cases should not be compared.

I have been criticised for keeping patients in bed too long. I believe they should not go out until the third week. They may move in bed and, for purposes of drainage, may sit up on the second or third day. I allow them to roll in bed. They are allowed on the lounge in the second week but not to move around much until the uterus goes down, or until the white lochia disappears.

As to the question of douches and irrigations after confinements, I make it a rule whenever the uterus is invaded, as in forceps operations where the forceps go into the cervix, or when the hand has been introduced in the uterus, or a rubber bag has been introduced, I always believe in the practice of washing out the uterus postpartum. In those cases where the uterus has been invaded by instruments or the bag, or by the fingers for an extensive examination, the uterus should be washed out. But in ordinary cases, where only one or two examinations have been made, the postpartum douche I do not give.

Nutrolactis I find most valuable in stimulating the lacteal secretion. I give three drams of it three times a day.

DR. GEORGE W. JARMAN.—There is one point, that has not been mentioned, one that I have tried clinically and found to be of advantage, that is, the use of coffee to lessen the flow of milk. Where there is too much milk the use of coffee morning and noon will lessen it. Use coffee and heat. I do not employ massage, but simply hot flannel and coffee.

Now another point: Neither criticism nor ridicule nor statement about one having less fear and more luck, will keep me from being convinced that no other one plan than the one mentioned can be adopted. In gynecology we have different methods of operating. We also have different methods of closing wounds. I have ceased to be cock-sure of my plan but it is the one I am familiar with and from which I get good results. I have been for sixteen years allowing my patients up on the third day to use the commode to move the bowels and the bladder. I absolutely take no stock in the statement about embolism or thrombosis brought on by such a posture. I have only seen good results. This last summer I was asked to see a case in consultation, a low grade of sepsis occurring on the eighth or ninth day. We have all seen cases where the uterus is lax and contains a blood clot. I suggested the use of compression and an oxytoxic, contract the uterus and move the bowels. When this was done she made a good recovery. This I have seen over and over again. I have never seen bad results in fifteen or sixteen years from allowing my patients to sit up to move the bowels or pass the urine by the third day. If the patient is able to pass her urine at the end of twelve hours, let her use the commode. I am speaking of the normal puerperal cases and not those with sharp hemorrhages. In normal confinements these patients can get up on the third day. I never

have the nurse catheterize the patient unless there has been some severe operation at the time of confinement.

DR. CHARLES JEWETT.—I would like to ask what is meant by mammary engorgement. Is it a milk or a blood engorgement? Bacon, of Chicago, a few years ago suggested that the engorgement is essentially a vascular engorgement and that massage, if practiced at all, should be applied from the nipple outward, not the reverse, as is the custom.

With regard to the nipples some preliminary treatment, I think, is rational. In preparation for nursing I allow the patient to manipulate the nipples, washing her hands first and then kneading the nipples with lanolin as a lubricant. The next morning the nipples are brushed with soap and a soft brush.

As to retention of urine, I let the patient up rather than use a catheter. A rectal injection of hot water, however, very rarely fails to bring about a bladder evacuation.

I have a book which I present, as bearing on the question we are discussing. It is an old and a very rare book which was given me recently by Dr. J. C. Reeve, of Dayton, Ohio. Its author is Dr. Charles White, of Manchester, England. It was published in 1773. In it are forshadowings of the present views of puerperal infection and the modern methods of prevention, about seventy years in advance of Holmes and Semmelweis.

The author, I may say, among other things, advocates letting the puerperal patient assume the upright position occasionally since this favors the expulsion of blood clots from the vagina and thus helps to prevent putrid accumulation.

DR. GEORGE L. BRODHEAD.—One of the most important points brought out by Dr. Dorman is the necessity of watching the uterus carefully during and following the birth of the child. During the fifteen or twenty minutes after the birth of the child, a large amount of blood may collect in the uterus, and one should not depend wholly upon the nurse, in the management of the third stage.

Dr. Dorman mentioned the use of moist gauze dressings. We have used sterilized pads, and can see no especial advantage in using a wet dressing. On the third day we use as a routine castor oil and glycerine, of each half an ounce, with good results. If there is constipation, later on, a combination of cascara and podophylin gives good results.

The idea of having the child nurse every four hours during the first two days is an excellent one. When the breasts become engorged, massage should be used and a saline laxative given. I agree with Dr. Dorman that massage is better than the use of the breast pump. If infection occurs, and abscess is threatened, ice combined with proper massage will, in nine cases out of ten, check the process. In regard to drying up the breasts, the plan of using a tight binder with a saline cathartic and limiting the amount of fluids taken, gives uniformly good results.

The use of the abdominal binder makes the patient more comfortable; it should be left on from three days to a week. Some women prefer to wear the binder for two or three weeks. It is hard for me to believe that the binder causes malposition of the uterus.

With regard to the use of ergot for after-pains, we believe that, unless the lochia are very profuse, it is a mistake to give it, for it simply increases the pain. If the contractions are very painful, codeine or morphine should be given.

As to the length of time women should remain in bed, we keep them from ten days to two weeks; then we allow them to be up in a chair until three weeks have elapsed, after which time, walking can usually be allowed.

Douches should be given when the lochia are foul or profuse, or for subinvolution.

With regard to the preparatory care of normal nipples, I allow my patients to go to term without any preparation. I find that cracked nipples will occur whether they have been subjected to preparatory treatment or not.

Many lacerations of the perineum can be repaired to better advantage some hours after delivery, but as a rule repair of perineal lacerations can be immediate. Sometimes the operator has a poor light, or poor assistants, and can do better work on the following day. Personally we suture the cervix only in case of hemorrhage.

As to the use of the catheter, it should be rarely necessary. I do not allow patients to get out of bed for the purpose of emptying their bowels until the tenth day. It is usually unnecessary for the patient to get out of bed for the purpose of moving the bowels or emptying the bladder.

Dr. Flint's ideas regarding the use of tampons are good. Every patient should be examined two and a half weeks after delivery; then if the uterus is large, treatment can be begun at once. Ichthyol and glycerine tampons, with hot douches and ergot give good results.

With reference to early rising from bed, I remember one patient who died of pulmonary embolism one or two hours after she was placed upon a douche-pan in order to urinate. For that reason, one cannot be too careful in getting the patient up.

DR. R. H. WYLIE.—With regard to the preparation of the nipples, all have spoken as if they had a routine method. I believe in examining the nipples to see whether or not they are normal; also whether in response to manipulation, they become erect. If the nipple is retracted or cracked, one can do a good deal for its nondevelopment by manipulation, especially towards the end of pregnancy. Ordinarily those that become erect on manipulation and are healthy will not give trouble unless some traumatism has been committed soon after birth. Massage will invariably stimulate nondeveloped nipples. It is a good plan to use some oily preparation. Friction stimulates the

epithelium, and the nipple becomes erect, expands and becomes convex and not concave.

I was surprised that nothing was said about the bowels and bladder before the birth of the child. It seems to me common sense that we should move the bowels by cathartics before or at the time labor begins; certainly by an enema before labor is far advanced. Empty the rectum and do not allow fecal masses to bother you at the time of delivery. Another important thing is to prevent overdistention and paralysis of the bladder; the bladder should be emptied frequently. If labor has advanced so far that the patient cannot pass her urine it is a good thing, and proper, to catheterize her.

As to catheterizing the patient after labor, in my practice it is exceedingly rare where it must be done. But I prefer to catheterize rather than to let the bladder become overdistended. I prefer to let the patients get up to pass their water even at the end of twelve hours. Even if I operate upon the perineum I usually let the patient up to pass water. Talk about embolism on getting up! The last speaker before me cut ground from under that argument; he spoke of embolism while the patient was in bed. Treat these cases according to their individual necessities.

DR. H. N. VINEBERG.—Did I understand Dr. Jarman to say that this patient with fever on the eighth or ninth day he advised to get up, as a therapeutic measure without having seen the patient personally?

DR. GEORGE W. JARMAN.—In the meantime I saw the patient. The patient had clots of blood which caused a slight infection. The uterus was large and soft. She had no chill and only a slight rise of temperature. That is the type of case I believe benefited by posture.

DR. A. M. JACOBUS.—It occurred to me while listening to the papers of the evening that it would have been well if some one had read a paper on obstetric "Dont's." I do not think that anything new to the members of this Society has been said to-night; what has been written and stated is evidently for others. Consequently a paper on "Dont's" would have been equally proper.

Speaking of "Dont's" it has been my experience that the obstetric nurse, and also the graduate trained nurse, one with a general hospital experience, is too handy with bichloride of mercury, vaginal douches and in the uses of the catheter. I believe a great deal of trouble originates there, that is, in their secret use during the lying-in period by the nurse but which we do not hear of until long after. I should like to speak of a few cases illustrating the too ready use of the bichloride, even by physicians, and the mistaking of a chill and fever due to mammary engorgement, etc., to a supposed uterine sepsis.

I. A patient engaged me to deliver her, but she had a premature delivery between the fifth and sixth month, and in the

emergency, called in a physician living near by. On the third day the woman's breast became markedly engorged, the so-called milk fever occurring, often the case even after premature delivery. It was mistaken for a uterine sepsis by the attending, a very competent physician, and the uterus was irrigated with a 1-2000 bichloride solution several times daily and he later swabbed the parts with a 50 per cent. solution of zinc chloride. A severe local inflammation followed. The patient developed a high fever, became delirious, semi-unconscious in fact, and was rapidly developing a serious mercurial poisoning. On being called to see the woman I found the whole vaginal surface and cervix uteri eroded and covered with cheesy masses. It looked like a bad case of aphthasis in the mouth of infants or a diphtheritic vaginitis. I stopped the bichloride douches, gave a vaginal and an intrauterine boiled saline irrigation and applied bismuth and boric acid to the raw surfaces of the vagina and cervix. The temperature at once fell and she was well on the way to recovery the day following, much to the surprise of the attending, who had overlooked the intensely engorged breasts and the so-called milk fever and who mistook the condition for one of uterine sepsis.

II. The second patient was confined of a premature of seven months at a large maternity and was discharged about the fourteenth day, according to custom, and referred to an associated clinic for local treatment which was thought to be necessary. She was treated at the dispensary for a week or more and then becoming generally worse, consulted her physician, a surgeon, who referred her to me. I did not find sufficient pelvic trouble to warrant local treatment so soon after her confinement. An examination of her breasts showed several large abscesses in each. The patient was referred back to the surgeon who opened the abscesses freely. After this had been properly attended to the general and pelvic condition cleared up promptly. I believe this was a case of bad breasts from inability of a weak infant to nurse properly and not a pelvic trouble as apparently supposed.

III. The third case, I shall refer to, occurred in the practice of a very competent physician with a large general and obstetric practice and a good bacteriologist. His patient had a chill and rise of temperature which led him to believe it to be due to uterine sepsis. He began using bichloride of mercury irrigations, 1-2000, in the uterus night and morning with the result that the patient's general condition became worse and much local fetor and tenderness followed. At my suggestion the doctor stopped the bichloride and used boiled water and salt irrigation for a day or so and the local and general condition cleared up promptly.

I believe nurses and doctors also are too quick to use bichloride and lysol irrigations after miscarriages and term labors, which irritate and aggravate the local trouble. To my mind there is only one thing to use in the vagina or uterus after a

miscarriage or labor, when irrigation is really indicated, and that is hot boiled salt water or the so-called normal saline solution. This will never do any harm and will flush out the parts satisfactorily.

I was taught years ago to allow the patients to sit up in bed, or assume a semi-sitting posture when not contraindicated by lesions or hemorrhage, with assistance, in from three to four hours to pass their urine. If you allow them to go six, eight or ten hours, the bladder often becomes overdistended and they then are frequently unable to pass their water and have to be catheterized.

I agree with those who believe in doing something for the moderate hardening and development of the nipples, especially in the primipara. I generally advise bay rum and the watery extract of witchhazel as used by athletes for a rubbing lotion night and morning. The subsequent application of cold cream or white vaseline, with traction and elongation of the nipples, makes, I believe, quite an improvement in their condition and lessens the possibility of mammary difficulties while nursing. After the confinement, before putting the baby to the breast, the nurse should scrub off the gummy material from the nipples which must occlude the lactiferous ducts and tend to mammary disorders.

DR. ROBERT A. MURRAY.—There are one or two points that I wish to discuss. I think that every man must use common sense. If a woman has lost her child in confinement we cannot let her up as if she was nursing. If she is in a normal condition, and is nursing her baby, the uterus will be contracted, as a rule, by the ninth day and certainly one would feel no hesitancy in letting her up. She could be up on the third day if the uterus had contracted. But if it has not contracted, certainly no sane man would allow her up. If a woman does not nurse her baby the lochia persists, and bleeding continues for three or four weeks. One certainly would not allow a woman up unless one knew absolutely that the uterus was contracted to the proper size. Sometimes on the tenth day the uterus is four or five times the weight the vagina is supposed to be able to carry. Another point is this, that if the woman is allowed to get up too early, the enlarged uterus presses upon the rectum and gives rise to lack of power to pass water, and hemorrhoids. Contraction of the bladder causes pain in the hemorrhoids associated with pregnancy, and this is specially true in primipara. For the hemorrhoids, some astringent should be used in solution; this will give the patient great ease and at the same time get the patient to pass her water. In these cases the use of hot water injections in the rectum is efficacious, helping the hemorrhoids as well. The rule I follow is, watch the uterus. If it contracts well, let the patient move around. If there is a disposition towards a prolonged labor with a relaxed uterus, keep the woman quiet. If the heart is weak, as from the heat or from a hard labor, discretion must be used. Any hard and

fast rule in treating individuals is all wrong. But the skill of the physician, and his knowledge of individual patients is what counts.

DR. W. S. STONE.—With regard to the treatment of the fundus during the first part or subsequent to the birth of the placenta, I should like to ask a question. Does not a normal uterus normally remain in a state of tonic contraction? That is the conception of the average nurse as she graduates from the maternity hospitals in New York, it is claimed, but I do not believe it. The normal uterus relaxes and contracts. The average trained nurse rubs the fundus of the uterus during the first or subsequent part of the birth of the placenta unless she is told otherwise. I have had occasion in many instances to tell the nurse that the uterus cannot remain in a state of tonic contraction all the time; it alternately relaxes and contracts. So she must watch it.

DR. HERMAN J. BOLDT.—I should like to call attention to one point. Embolism is talked about much. Patients do not die of embolism, unless septic, or subjects of organic heart disease. Under normal conditions they will not die of embolism if allowed to get up. It is desirable for the patient to get up to evacuate the bowels and bladder.

DR. RALPH WALDO.—Dr. Marx advocates placing a bandage about the breasts, and, perhaps, using an ice bag, but he speaks against massage except in rare instances. Two other speakers have spoken strongly in favor of massage when the breasts were engorged by milk or by blood. I went through two long experiences with both methods of treatment. Where the breasts are massaged indiscriminately, more abscesses develop. Massaging an engorged breast is bad practice. If you place a bandage on the breast, and apply an ice bag, the patient will have less discomfort and fewer complications.

DR. J. CLIFTON EDGAR.—As to the matter of the patient getting up, for sixteen years I have had to do with three out-services in the tenement house district: during that time I have had under observation histories of from 20,000 to 30,000 cases of confinement. It is well known that these patients do not possess a bed-pan, or a douche-pan. They get up and go to the closet. I have seen them time and again get up and go across the room for something on labor day. Yet in this large number of cases I do not know a case of sudden death that could be attributed to this getting up. Still the condition of embolism obtains and due respect must be paid to this fact.

DR. F. A. DORMAN.—The object of these papers was to bring out discussion among the members, and I think that object has been accomplished. I do not think we need a paper on "Dont's." No member of this Society would use bichloride of mercury in the uterus.

I am enthusiastic about the use of the binder, because the patients expect it. They will not move about and turn in bed

freely unless they are bound up. Almost every patient with a relaxed abdomen is prone to a great deal of distention and tympanitis, and this is relieved by the use of the binder. They are more apt to be conscious of the ascent of the bladder. I believe, however, that the use of the binder after four or five days, is superfluous.

With regard to the diet I imagine few patients, if not allowed to have milk at all, will get along for forty-eight hours without some solid food.

For the after-pains, a successful method of treatment, where discomfort is persistent and extreme, is the intrauterine douche with sterile saline solutions. Even the hot vaginal douche often gives speedy relief.

I am partial to massage of the breasts. There is nothing which softens the breasts and starts the flow of milk as well as massage. About engorgement I believe there is a condition of vascular engorgement in the early hours when the breasts are very full; they are tense, hard and painful, and yet there is little milk present.

As regards temperature from distended breasts, often there is a nervous reaction of 101-102, but I practically have never seen it higher on the third, fourth or fifth day when it was due to engorgement of the breasts; if the temperature is higher it is certainly due to absorption from the bowels or from some infection. As to chill with a rise in the temperature I think this is impossible from distended breasts alone.

Sewing the cervix is a ticklish matter, and there is a great possibility of infection. Then, too, one should bear in mind the possibility of over-sewing the torn cervix. Such an accident occurred last year; I had to care for a torn cervix and sewing was necessary because of the hemorrhage. I tried to make a good union. The result was that in forty-eight hours the cervix was overclosed and there was high temperature from retention. I believe the majority of the cases do well if you let things alone.

Dr. Edgar possibly misunderstood me; I meant to say that at the end of forty-eight hours move the bowels and give a more liberal diet. One cannot lay down any general law regarding the time for getting up after labor. I believe the woman should have rest in bed in the recumbent position for at least one week. In the tenement houses I have seen these women get up on the second or third day and do the cooking, but these women make the poorest and slowest recoveries and I have seen many of them afterwards in the dispensaries. These women carry with them a heavy subinvolted uterus that is often tipped over backwards.

DR. S. MARX.—The papers read and the discussion following show that some things said were either exaggerated or else misunderstood by the members of the Society. Of course one cannot go over the entire subject and some statements made may seem prosaic.

The term milk fever has no bearing on puerperal sepsis; this was the term that the old physician applied to the afflux of milk to the breasts; there was a slight temperature with this engorgement of the breasts with milk, but it had absolutely nothing to do with puerperal sepsis. For engorgement of the breasts I use the binder, ice bags and cathartics.

As for laceration of the perineum, we all meet with it, and I think I know as much as to their prevention as the average man, for I am seeing lacerations of the perineum all the time. I have them in 10 per cent. of primiparæ. We ought not to have them, but we do.

The cervix I never suture except to control hemorrhage. The perineum is best sutured before the birth of the placenta. Gauze should be placed against the cervix, the sutures then passed and left untied until after the birth of the placenta. It is not necessary to administer a dose of chloroform.

As to Dr. Edgar's statement about getting up, I never allow my patients to get up until the white lochia has appeared, even though the patient lies in bed four weeks.

Douches I never use, because I feel that I can trust my asepsis.

In reference to Dr. Jarman's statement, I referred to maternity cases pure and simple; cases of embolism I have looked for but have seldom been able to discover. There was one case, however, in which the temperature chart showed no rise of temperature in the week, nor was there any increased pulse rate; she sat up and developed the classical symptoms of embolism and died. That case was carefully watched. Whether she had a slight sepsis or not has no bearing on the subject.

This last summer I was in Switzerland and I ran across a hovel in the mountains. I went into the cabin and saw a woman almost ready to drop her baby. I was interested and asked a few questions. This was on Friday morning. I returned on Monday and she was doing her family washing; Tuesday morning she was ironing. She had delivered her baby Saturday night. She washed and ironed and was ready to deliver the wash Wednesday morning. Yet we would not advise such doings in New York.

I do not like the woman to get up until the white lochia has appeared and I do not let them up and out of bed to have a movement of the bowels or to pass water.

REVIEWS.

TEXT-BOOK OF THE PRACTICE OF MEDICINE. For Students and Practitioners. By JAMES MAGOFFIN FRENCH, A.M., M.D., Formerly Lecturer on the Theory and Practice of Medicine, Medical College of Ohio. Third, Revised Edition. Pp. 1253. Illustrated by 110 engravings in the text and 25 full-page plates in tints and colors. New York: William Wood and Company, 1907.

The first edition of this work was intended for the use of students only, and was admirably suited to this purpose. The present edition is written for both practitioners and students. It has been greatly enlarged by the addition of new material as well as by the rewriting of much of the former contents. The chief fault of the former edition, its unsatisfactory typography, has been entirely overcome by the substitution of extremely legible type and by better spacing of the lines. One notes a great improvement in the arrangement of the subject matter and an elimination of the crudity of style of the first edition. As the work now stands it forms a magnificent memorial to its lamented author whose death has occurred within a few months.

In Part I, Principles of Medicine, we find added paragraphs on poisonous products of metabolism, blood plates and opsonins, and a fuller discussion of immunity. In Part II, Practical Medicine, are found a number of added articles on tropical diseases and fuller treatment of such infectious diseases as yellow fever and plague. Under the treatment of typhoid fever one notes a tendency toward greater liberality in diet. The statistics of extremists in this direction seem to be on a par with those of the results from more restricted feeding; but the author states that "every avoidable departure from a fairly rigid milk-diet adds an occasion for regret in the event of a fatal issue." Paratyphoid fever is now recognized and described as an entity. Under pneumonia the importance of open-air treatment is emphasized. Dysentery is now classified as bacillary, acute amebic, and chronic. Under tuberculosis is found a caution against the employment of the tuberculin test and the therapeutic use of tuberculin. The writer still urges exercise in the treatment of tuberculosis. The rest-cure is mentioned as applicable only to advanced, hopeless cases. This appears to be more worthy of unfavorable criticism than any other statement in the volume. The chapter on diseases due to animal parasites is much more full and complete than formerly and has, in fact, been made quite a feature in the work. An article on heart-block has been included in this edition. Pages 862 and 863 have unfortunately been transposed. The section on diseases of the nervous system shows extensive revision. In Part III, Clinical Methods of Examination, paragraphs have been added on cerebrospinal fluid, spirochete stains and a few chemical tests.

The characteristics which impressed us favorably in the first edition are still in evidence, one of the chief of these being the omission of case reports, of statistics, and of extensive discussion of theories. The volume in its adult form deserves, and will doubtless receive, as cordial and appreciative a reception as when it made its first appearance in the less pretentious guise of a text-book for students.

H. D.

TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS. Vol. XIX for 1906. Octavo, pp.

342. Published by the Society. W. W. Potter, Secretary, Buffalo, N. Y.

This volume contains the papers and discussions brought before this noted Society at its nineteenth annual meeting, nearly all of which have appeared in the pages of this journal.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNEOLOGICAL ASSOCIATION. Vol. XIX, Octavo, pp. 565. Published by the Association, 1907.

The volume contains the many and valuable papers brought before the Society at its nineteenth annual meeting held at Baltimore, in December, 1906.

The importance of the early diagnosis and prompt surgical treatment of puerperal thrombosis of the pelvic veins is urged by George H. Noble. Some of the other subjects discussed are goiter, by Mayo; hysterectomy, by Bovée; toxemia of pregnancy, by Gordan and Talley; liver symptoms and surgery, by Richardson, Stone and Cullen; treatment of hemorrhage by direct transfusion, by Crile; tuberculosis of the kidney, by Kelly and Noble; Hodgkin's disease a type of sarcoma, by Coley; and the surgical aspects of gastric carcinoma, by Deaver.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Vaginal Ovariectomy in Pregnancy.—Ida Democh (*Monat. f. Geburts. u. Gyn.*, August, 1907) gives the histories of twenty-one cases of vaginal ovariectomy found in literature. Although this is the best method for removal of ovaries in pregnancy in most cases, still it may be most difficult in case of strong adhesions dermoid cysts, short pedicle, and slight movability of tumors. Of twenty-one cases of vaginal ovariectomy, seventeen were operated on, between the first and fifth month of pregnancy, two by anterior colpotomy, the rest by posterior colpotomy. All the women recovered; in three cases abortion took place. The danger of abortion decreases with the shortness of the time of pregnancy. After the fifth month operation is too late. The chances of the mother should be placed before those of the child, which is as yet not viable. Posterior colpotomy gives better results for the child than anterior colpotomy. Without operation in ovarian tumors complicated by pregnancy from one-fourth to two-thirds of the mothers die in delivery.

Eclampsia Resulting from Increased Renal Tension.—J. G. ter Braak and A. Mijnieff (*Zent. f. Gyn.*, October 19, 1907) take a case of increased kidney tension resulting in eclampsia as a text for a discussion of the cause of eclampsia and the desirability of operation by decapsulation of the kidney. They believe that there is a mechanical factor in the production of eclampsia added to the toxic element. This mechanical factor

is the increased renal arterial tension, from which results an increased tension in the veins and swelling of the organ. This stasis may disappear through collateral circulation, through stretching of the capsule, or through the removal of the mechanical factor. There may be added to these factors a nephritis resulting from toxemia. Splitting of the capsule and decapsulation is the best method of reducing arterial tension in the kidney. This should be done, if it is to be effective before the nephritis has reached so high a grade as to have destroyed the kidney tissues. With oliguria, much albumin and blood in the urine, and casts, operation is indicated. If the tension has continued for but a short time the prognosis after operation is best.

The Correct Method of Interruption of Pregnancy.—Walther Hennes (*Münch. Med. Woch.*, October 1, 1907) discusses the best method of interrupting pregnancy when the needs of the mother require that it shall be terminated. He believes that the best method is one that shall produce pains of a normal character and an expulsion of the ovum by the natural means. The ganglia that control the uterine pains are on both sides of and behind the cervix, slightly below it. It is by insults offered to these ganglia by the pressure of the child that the normal pains are produced. The means of interrupting labor should operate in the same manner. The apparatus should press on these same ganglia. Such an apparatus is to be found in the cigarshaped rubber bag or the balloon dilator. Bags of different sizes can be used and the pressure varied by differences in the fullness of the inflated bags. The result is the excitation of rhythmical contractions, and a physiological labor. A living and viable child may thus be delivered. This method is infinitely preferable to rupture of the membranes allowing of the drainage off of the liquor amnii, thus doing away with the natural dilating force of the bag of waters. This when it happens before labor is begun in any case produces a very slow and tedious, not to say dangerous, labor. The whole labor is completed with the balloons in less than twenty-two hours at the longest, while rupture of the membranes delays it from seventy to eighty hours. This method has been used for twelve years at the Frauenklinik in Breslau, and there has never been a bad result. The method may be thoroughly aseptic when properly conducted. The ending of labor is normal and spontaneous. The method is absolutely free from danger, and is applicable at any time during pregnancy, although it is not advisable to use it during the first two months. When a more rapid procedure is desirable to save the life of the mother the author makes use of vaginal Cesarean section. He considers this preferable to the use of cervical incisions or of Bossi's dilator. The latter is likely to leave tears that will not heal easily, while the vaginal Cesarean section leaves clean-cut wounds that can be perfectly sutured. The vaginal section is not desirable when there is placenta prævia, since too free hemorrhage is likely to supervene.

Induced Labor and the Quickest Method of Producing it with the Mechanism of Dilatation.—L. M. Bossi (*Gyn. Rund.*, Part 20, 1907) tells us that he has not changed his views as to the best method of artificial dilatation in the seventeen years since he first described his dilator, but that he has several times modified the dilator as a result of experience in its use. The dilatation may be accomplished in from one-half to two hours. He believes that the longer time is preferable. If danger presses, the operator may hurry the dilatation. As soon as the instrument is introduced it acts as a foreign body and causes energetic contractions. The dilator has a dynamic as well as a mechanical effect. Dilatation by the hand is not only difficult for the operator, but in some cases absolutely impossible, while it takes too much time, in some cases thus endangering the life of the patient. The mechanical power of the dilator lies in the crucifix form of the branches. Many dilators have been proposed which are faulty in their construction, and the bad results of their application have brought the method into disrepute. The instrument should never be introduced through a speculum nor should the uterus be held with forceps. It should always be introduced along the hand and never blindly. Toward the end of pregnancy at least an hour should be consumed in dilatation and the position of the blades should be changed two or three times to avoid tearing the cervix. The ends of the blades should be more blunt and longer than they were at first made. The dilator may be used with submucous fibroids in the uterine canal to permit the removal of the growth. The author believes that the method stands today as a good one, and that the failures of bad and improperly applied instruments should not be allowed to militate against its use with proper instruments applied in a proper manner. The indication is to improve the instrument and to teach the accoucheur its proper use.

Rapid Dilatation by Bossi's Method.—Joaquin Certiguera (*Jour. de Méd. de Paris*, October 13, 1907) describes Bossi's dilator as easy of application and easily kept aseptic. Its action is more rapid than any other method and if applied slowly there is no need of having severe tears or hemorrhage. Only small incisions of the cervix are needed to allow of its introduction, which will not require suture. The large incisions sometimes practised for dilatation need sutures and expose the patient to danger of sepsis. The various forms of rubber balloons are slow in action and difficult to keep aseptic through the number of hours that are needed to secure perfect dilatation. This method is applicable only when there is serious danger to mother or child. It should be used whenever there is such danger with a pelvis that is roomy enough to allow of delivery after dilatation. It is contraindicated when the pelvis is contracted. Dilatation should be carried to a little larger size than the diameter of the child's head, since there is some contraction of the cervix after withdrawal of the instrument. The author uses it when

the fetus is abnormally large, when labor is delayed more than nine months, when the shoulders are very broad, when the internal os is contracted, in eclampsia, and in normally implanted placenta with premature separation. In placenta prævia it is doubtful whether version will not be of greater value to the patient.

Treatment of Injuries of Neighboring Organs in Hebosteotomy.

—P. Kroemer (*Zent. f. Gyn.* Oct. 12, 1907,) considers hebosteotomy as an operation more appropriate for the hospital than for the private house. When the bladder and vagina are injured in this operation the rent should be at once repaired, since there is danger of sepsis from extravasation of urine into the tissues around. It is possible to so safeguard the bladder during the operation as to prevent injury. The author has tried various forms of technic, and prefers the subcutaneous method, by the symphysis from below upward, so that the finger passes along the surface of the bone, and the saw avoids the bladder. There is considerable bleeding if the clitoris is cut through as Tandler advocates doing. The upper opening of the needle canal is closed with a suture so as to prevent infection. The bladder may be wounded through a lateral incision, by the needle that leads the saw, by the tearing of the pubovesical ligament when the widening of the opening occurs quickly, or by the head pressing on the bladder against the bone during a slow passage through the pelvis. Each sort of lesion has its special region. The wound by the carrier of the saw occurs at the summit of the bladder wall and the saw is drawn through the bladder so that bits of bladder epithelium appear on the saw, or urine wells out of the canal. This wound is on the front wall of the bladder. Tears arising from too rapid separation of the bones are on the lower portion of the wall near the urethra which is generally torn. Such lesions leave behind incontinence of urine from the tearing of the sphincter vesicæ. Pressure lesions come on during the puerperium from exfoliation of a necrotic portion of the bladder wall. They are at the lower part of the bladder. The permanent catheter is of value only in cases of this last class. Wounds by the saw and stretching should be sutured at once. The bladder may be protected by carrying the saw along the finger either from above or below. Tears at the neck of the bladder are better avoided by the subpubic vestibular incision. The bladder is filled partially with fluid, the catheter put in place, and then the bladder is filled. The ligament is loosened after making the incision, and the finger passes along the symphysis, the needle following it. After sawing, the vestibular incision is sutured. In spontaneous delivery there is no fear of tearing, but after version there is danger. Since using this method the author has had better results than previously. Of nineteen cases operated on, the author has had recoveries in all.

Hernia after Hebotomy.—Robert Mann (*Zent. f. Gyn.*, Nov. 2, 1907) says that the union after hebotomy is generally fibrous.

This is rendered likely by the insults that the tissues have to bear, the distance of the fragments from one another, and the method of union, whether primary or secondary. Thickenings of the ends of the bone occur and are joined by fibrous tissue. Hernia may occur in two ways; first through a separation of the recti near the outer inguinal ring resembling inguinal hernia; second between the bony ends without insufficiency of the abdominal wall. This requires yielding of the fibrous tissue or increased abdominal pressure. Both occur at the time of pregnancy. The periosteum is injured by the saw, a ragged surface remaining, liable to necrosis and not able to form good bony connection. Some authors advocate the use of a foreign substance to hold the bones together. Others advocate pelvic plastic measures to prevent hernia. A bit of the tibia may be placed between the ends of the bone. A radical operation for the cure of the hernia may be done in two ways; the aperture may be closed by an attempt to obtain a bony ring through introduction of a bit of bone between the ends, or it may be closed by soft parts. The author describes his method of closure by making use of the adductor longus.

New Elements in the Study of Cardiac Function in the Puerperal State.—C. Merletti (*Ann. d'Ostet. e. Gin.*, Aug., 1907) refers to the general belief that the heart is hypertrophied in pregnancy and the puerperal state. The author has made careful observations on pregnant women by the use of cardiography, sphygmomanometry, sphygmography and measurements. He finds that there is no hypertrophy of the heart during pregnancy. There is irregularity of the cardiac rhythm, but this is transitory and is the result of reflex disturbances of the cardiac mechanism. Pregnancy does not habitually elevate the blood pressure; in general this it is unmodified. The reaction of the heart to atropin demonstrates that the functional power of the heart in pregnancy is the same as that in the normal non-pregnant woman. There is a condition of heart weakness for a few days after labor which may cause thrombosis or asystole.

Sterility in the Female.—Kurt Torkel (*Monat. f. Geburts u. Gyn.*, Sept., 1907) discusses the occurrence of sterility especially in the female. Both parties may participate in sterility through gonorrhea, and this is the cause of sterility in one-third of the cases in women. The next most important cause is tumors of the genital organs. Following this stands endometritis. The author does not believe that uterine displacement has much to do with sterility, it being in reality the accompanying endometritis that causes the spermatozoon not to reach the ovum. Stenosis of the cervix is rarely so complete as to prevent access of the spermatozoon, since it is so small that its passage is not hindered. Occasionally a malformation of the hymen is responsible and more frequently vaginismus or dyspareunia. The author designates as primary sterility that which does not result in any conception, and as secondary that in which there

have been one or more conceptions before sterility came on. In a small number of cases disease outside the genitals prevents ovulation, such as nephritis, diabetes, typhus, chlorosis, anemia, tuberculosis, and poisoning by alcohol, tobacco, morphine, etc. The author doubts whether obesity is a cause or an effect of sterility, or a result of the same cause that produces the sterility. In summing up, the author states that in 26 per cent. of cases the husband is the cause of sterility through azoospermia. Inflammatory processes in the woman are by far the most frequent causes, when sterility is due to her. In two-thirds to four-fifths of other cases the husband is at fault. Only a small proportion of women are really sterile in the sense of being unable to conceive. These are the victims of deformities, tumors, and lesions of the neighboring organs to the uterus.

Suppurative Lesions Developed in the Membranes of the Ovum.—A. Fruhinsholz (*Ann. de Gyn. et d'Obst.*, Oct., 1907) recounts the history of a patient who underwent abortion. After the removal of the ovum it was found that there was a distinct layer of pus containing microbes between the chorion and amnion. The amnion was white, thick, and showed islands of degeneration. The author considers it possible that an infection of the uterine cavity before conception and a latent state of microbism existed which was revealed at the time of the abortion by a collection of pus within the envelopes. Or there might have been an infection starting from the vagina before the union of the layers of membranes. Another explanation is an infection resulting from attempts at abortion not acknowledged by the patient. The microbe that was found was the pneumococcus, a microbe that is not very frequently encountered and this renders these suppositions improbable. It is possible that this was a case of metastatic localization, reaching the location of the uterus by way of the blood, arising from contamination by la grippe. The presence of pus in the membranes was the immediate cause of the abortion. The author then gives a résumé of the cases of this nature recorded in literature, ten in number.

GYNECOLOGY AND ABDOMINAL SURGERY.

Sensorial Corpuscles in the Retro-uterine Region of the Human Fetus.—H. Keiffer (*Bull. de la Soc. Belge de Gyn. et d'Obst.*, Vol. XVII, No. 5) has made a study of the development of the nervous system of the uterus of the human fetus at various ages. He finds that there exists in the retro-uterine region a nervous mass containing terminal corpuscles similar to those of Pacini, some simple, others complex, varying from one or three cylinders to bunches of three simple corpuscles. These have characteristics distinct from those of Pacini, in the existence of a layer of cellular substance around the axis-cylinder. These are situated on the mixed sympathetic and spinal nerves, which pass direct to the uterus. They are juxta-uterine,

retro-cervical, beneath the cul-de-sac of Douglas, and above the posterior cul-de-sac, they are of especial interest, with reference to the unknown uterine innervation, to the cause of labor, to the cause of the pains of natural and artificial dilatation, of posterior parametritic lesions, uterine retroflexions, and tumors, and in respect to the physiology of sexual intercourse.

Statistics of Prolapsus Operations.—J. Scharpenack (*Zent. f. Gyn.*, Sept. 7, 1907) has performed a modification of Schauta's operation for prolapsus in one hundred patients with excellent results, at the Leipzig Frauenklinik. In the first fifty cases the peritoneum was opened with the Paquelin cautery through the anterior wall over the cervix. The fundus was fixed to the anterior vaginal wall and the operation completed with perineal repair. The entire operation, including the tubal sterilization and repair of the perineum is completed in thirty-five minutes. There were no fatalities. The primary prognosis of the operation was good. An important point is that the patient is obliged to remain in bed only three weeks, which is important to women of the working class. As to the remote results, the patients expressed themselves as satisfied, and as relieved of the feelings of weight and backache of which they complained so bitterly. Of sixty-nine patients from whom replies were received to an inquiry and request for examination, twenty-four sent only a brief response. Forty-five patients were examined by the author. In five cases there was a partial return of the prolapsus, producing a small cystocele. Twenty-one patients had no recurrence. Sixteen had a slight descent of the anterior wall and three of the posterior wall. The tubal sterilization was satisfactory in all cases. There is no reason for leaving a possibility of renewed conception in a woman when this will bring about the return of the very condition for which operation is done. This operation is not suitable for young women, but for those at or about the menopause. The author holds that it is possible to obtain by this operation a relief of all the important symptoms of prolapsus, removal of the cystocele by fastening the fundus to the urethral region, resection of the mucous membrane, and production of a high and thick perineum. He considers it far better than wearing a pessary which will not entirely fulfil the indications.

Blastomycetes and Inflammations of the Female Genital Apparatus.—T. H. van de Velde (*Zent. f. Gyn.*, Sept. 21, 1907) has made systematic examinations of the secretions from seventy-seven patients affected by inflammatory conditions of various parts of the genital organs, which were suspected of blastomycetic origin. The typical form of yeast cultures is found only in fluid cultures, in which blood has been mixed. The author regards the presence of blastomycetes as an etiological factor only when they are present in large numbers and in a pure culture, and when there is found in each group of cells a large mother cell. The seventy-seven patients lived in twenty-

four different neighborhoods at some distance from one another. All these cases presented inflammations of some part of the genital organs. In normal genitalia no blastomycetes were found at any time. The most numerous cases were acute inflammations of the mucous membrane of the cervix, with colpitis and vulvitis. Others consisted of sudden increase of symptoms of a chronic process of infectious nature, especially gonorrhea. In five cases there was a chronic cervical catarrh which had resisted all sorts of treatment. As long as the yeast colonies remained there was no relief, but when they were destroyed by the use of salicylic acid douches the inflammation was relieved. The germs were found in pure culture in the discharge from the ovulæ Nabothii in two of these cases. The symptoms in the acute cases were itching, burning, redness, swelling, and slimy purulent discharge from the vagina and vulva. The etiology is interesting. If the germs came from the douche water it would be necessary that many sources of water supply should be infected as the patients came from long distances. The writer claims that in two cases there was an undoubted inoculation from the husband of the patient, who was examined and found to be infected with the same germs. (Possible infection of husband by wife.) These observations show that a microscopic and cultural diagnosis is necessary in inflammatory conditions of the genitals. Blastomycetes were found in a mastitis, in the stools of the child nursed by this woman, and later in an acute inflammation of the mother's genitals. A patient having intestinal catarrh of blastomycetic origin suffered from the same condition of vulva and vagina. Blastomycetes were found in a patient dying from puerperal fever, in acute vulvitis of young girls, in the glands of Bartholin, in the uterus, in pyelonephritis and cystitis, free in the peritoneal cavity, in inoperable carcinoma of the cervix, in pelviperitonitis in the blood. Gonorrheal infections furnish a very favorable ground for the growth of these germs.

Elephantiasis Endometrii Fibro-sarcomatosa Gigantocellularis.—J. Fellander, (*Arch. f. Gyn.*, Bd. 83, H. I) describes under this heading a case of polypoid degeneration of the entire uterine mucosa in the connective tissue of which was found a considerable number of giant cells. The patient suffered from amenorrhea, pain in the abdomen, and dirty, foul-smelling discharge. Examination showed a polypoid growth in the cervix, and others above the widely-dilated os uteri. It was decided that owing to the probable sarcomatous character of the growth a radical operation was desirable. The tubes were degenerated into cysts, and the ovaries enlarged. The patient's age was forty-eight and so the menopause would not be premature. After removal of the uterus and adnexa the patient entirely recovered, and is still living in good health seven years after the operation. Examination of the uterus and adnexa showed

that the growth was not sarcomatous, but a degeneration of the entire mucous membrane, not involving the muscular walls. The growth consisted mainly of loose connective tissue, in parts degenerated, in the meshes of which giant cells were found. There was a marked proliferative interstitial endometritis with involvement of a few of the glands. The blood-vessels and lymphatics were not involved. There were neither the characteristics of epithelioma nor of sarcoma. It was not the product of a regressive metamorphosis of the endometrium, but a progressive process characterized by the formation of giant cells. Hence the author brings it forward as an example of an endometritis which is not included in any of the ordinary classifications.

Treatment of Dysmenorrhea by Hyperemia of the Breasts.—Herman Freund (*Munch. Med. Woch.*, Oct. 19, 1907) criticises the position taken by Polano that we can treat dysmenorrhea successfully by using Bier's passive hyperemia upon the mammary glands. Polano has stated that the rationale of this treatment is that there is an antagonism between the functions of the ovaries and of the mammary glands. The author says that this is rather a coordination of functions than an antagonism. Any good results in dysmenorrhea must be obtained in one of two ways; either the influence is on the blood system or the nervous system. But neither in normal nor abnormal menstruation can the blood pressure in the genital organs be affected by that of the mammary glands. The author considers that any effect on the uterus from treatment of the breasts must be by means of suggestion only.

Hyperemia in Gynecology; Suction Massage.—C. Weinbrenner (*Munch. Med. Woch.*, Oct. 1, 1907) describes his method of applying suction and passive hyperemia to the treatment of the genital organs by means of a speculum from which the air is exhausted by a syringe. This treatment is contraindicated in acute processes involving the genital organs, but in chronic inflammatory conditions, especially of the endometrium and uterine wall it finds a valuable application. The author has had the best results in such cases. There is abstraction of large amount of mucous, pus, and blood from the cavity of the organ, and the result is a feeling of lightness and well being that lasts from twenty-four hours to a week. When the treatment is repeated at suitable intervals a cure results. It is also useful in the adhesions resulting from parametritis. The suction draws on these adhesions and aids in causing their absorption. A prominent effect is the removal of all pain. The length of the sittings is twenty minutes and the suction is decreased two or three times during that time and again renewed. Pain in the back and abdomen are at once relieved.

Menstruation without Ovaries.—Georg Gellhorn (*Zent. f. Gyn.*, Oct. 19, 1907) says that menstruation after the removal of the ovaries is generally referred to an imperfect removal of

ovarian tissue. He describes a case in which the continuance of the flow was due to adhesions which brought the blood from the omentum to the uterus, which was itself atrophic. Menstruation continued for seventeen months after the operation. In another case menstruation had been absent for six months when the administration of ovarian extract was begun and a regular flow ensued. The ovary is not the cause of the flow but the stimulus which provokes it. Hence the use of ovarine may act as a stimulus when the natural stimulus from the ovaries has failed in the menopause.

Koch's Old Tuberculin in Gynecological Diagnosis.—Pankow (*Zent. f. Gyn.*, Oct. 19, 1907) sums up a series of thirty-two cases of tuberculosis of the abdominal organs, in which the diagnosis was assisted by the injection of the old form of tuberculin made by Koch. In all these cases the operation acted as control on the diagnosis. When there was a local reaction from the injection it was shown by pain in the abdomen and profuse diarrhea. A general reaction was shown by fever, chills, nausea, vomiting, etc. Only patients having no fever were injected. The thirty-two patients may be divided into four classes: 1. Those in which neither reaction nor histological diagnosis showed tuberculosis. 2. Those in which the diagnosis was not established by the injection. 3. Those in which reaction and histological diagnosis agreed. 4. Those in which with a negative reaction diagnosis, histological examination showed tuberculosis to be present. The histories of all these cases are given. Of thirty-two cases in which tuberculosis was established by examination the result of the tuberculin injection was positive in twenty-four, that is 75 per cent. It was negative in nine, 25 per cent. The local action was absent in twenty of the cases that showed general reaction. The author states that according to his observations if both local and general reaction are absent in all probability tuberculosis is absent from genitals and kidneys. Local reaction seems to be of little value in the diagnosis of abdominal tuberculosis.

DISEASES OF CHILDREN.

Hydrocephalus Complicating Epidemic Cerebrospinal Meningitis.—Henry Koplik (*Amer. Jour. Med. Sc.*, April, 1907) describes acute hydrocephalus as occurring in three distinct forms with epidemic cerebrospinal meningitis. The first type occurs at the very onset of the disease and leaves no permanent damage to the brain if the patient recovers. The second occurs either at the outset or after some time in infants under two years of age and its symptoms are at first difficult to differentiate from those of meningitis. Percussion of the skull in these cases does not give a tympanitic note but the impression of a sac with fluctuating contents. Lumbar puncture relieves the pressure but the fluid soon reaccumulates and pressure symptoms return. In children from one and a half to two years of age the fontanels

and sutures being closed the Macewen tympanitic note may be obtained. The third clinical form is that of supervention, in a patient who has been apparently doing well. of stupidity, a temporary rise of temperature, vomiting, increased rigidity, dilatation of the pupils, strabismus, with tympanitic note on percussion over the lateral ventricles. Hydrocephalus may occur with a high temperature, which intermits to the subnormal daily; or it may supervene in a patient whose temperature is normal; or when once inaugurated, the temperature may run an intermittent subnormal course.

In those cases in which the hydrocephalus supervenes at the onset of the disease the patient goes into a condition of collapse; the pulse may be rapid and thready, the surface is cold and ashy in hue, the pupils are dilated, respiration is sighing in character, the patient exhibiting all the symptoms of cardiac collapse.

In looking for a tympanitic note in percussing over the lateral ventricles as a diagnostic sign it must be remembered that this may be less marked a few days after being distinct and later return. The writer resorts to lumbar puncture only at the outset of the disease. or in its course when he is convinced that there is an accumulation of fluid in the ventricles; unless the signs detailed in this paper are present, irrespective of headache, delirium, or high temperature, he does not puncture.

The indiscriminate application of lumbar puncture to the treatment of acute cerebrospinal meningitis is of as little utility in itself as a curative measure and as productive of harm as would be the indiscriminate use of any therapeutic procedure. Lumbar puncture should not be performed with a view to evacuating purulent or semipurulent contents from the cerebrospinal spaces, for in most cases this of itself does not cure the case. It should also not be performed for severe headache, fever, or unconsciousness, and only in fixed cases should it be performed for diagnostic purposes.

Cerebrospinal Fluid.—F. P. Rous (*Amer. Jour. Med. Sci.*, April 1907) presents a study of the cerebrospinal fluid. He says that in investigating it determinations should always be made of the pressure in the subarachnoid cavity, of the protein content of the fluid, the number of cells per c.mm., and their kind.

By these means a specimen may often be pronounced pathological which under the ordinary examination appears normal. Admixture of blood does not necessarily render a fluid valueless.

Normal fluids differ but little in quantitative cell-content. It is doubtful whether cells are ever wholly lacking, and up to seven per c.mm. may provisionally be set as the range in specimens not pathological. The normal protein-content, too, lies within well-defined limits. On the other hand, pressure variations which depend on factors other than a lesion of the central nervous system are wide.

Except along the broadest lines there is nothing specific in the

permutations of protein, pressure, and cells. But along these lines the fluid from cases of tuberculous meningitis is characteristic, as compared with that from cases of paresis or of cerebrospinal syphilis, and these also differ from the normal fluid. If a case be suspected to be one of tuberculous meningitis, but the fluid prove to be normal as regards pressure, protein, and cells, the disease may be ruled out. This rule probably holds absolutely, but it is desirable that more cases be studied before the statement is too strongly made.

The "clear elements," "cellular degenerations," "pseudoendothelial cells," often noted, are only degenerated cells.

To prove the last contention specimens, obtained aseptically, of fluid known to contain many cells were incubated for varying periods and centrifugalized; slides from the sediment were spread and mounted in the usual manner. Control slides were always made from another portion of the same specimen while fresh, and cultures were taken after the incubation to demonstrate that bacteria had no part in the work. Several clear fluids from instances of tuberculous meningitis and one of normal cell-content were used. The result was in every instance the same: the cells were rapidly transformed into those doubtful bodies which had been observed on routine count.

Opsonic Power of Serum in Cerebrospinal Fever.—The results of sixty-three determinations of the opsonic power of the serum in cases of cerebrospinal fever occurring during an epidemic in Belfast have led Thomas Houston and J. C. Rankin (*Lancet*, May 4, 1907) to the following conclusions:

(1) From the sixth day onwards all the cases examined (with one exception on the seventh day) showed an opsonic index of over 4; several of the cases from the second day onwards also gave an opsonic index of much above 4.

(2) The opsonic index seems to be a more delicate test of infection than an agglutinative experiment (dilution one in three, incubator temperature, limit fifteen minutes); an agglutinative effect upon the meningococci was never noticed until the index reached five times the normal, while after that, with one exception it was always well marked.

(3) The combination of this agglutinative effect and the opsonic determination will furnish in this disease a specific test of great value in diagnosis. The low opsonic power always found in normal or non-infected sera, so that even when moderately thick emulsions are used two or three cocci were the maximum found in any leukocyte, and the uniform absence of all agglutinative effect in all preparations containing normal serum forms a striking contrast with the very high opsonic effect found in preparations containing the serum from all cases of the disease on or after the sixth day and in several cases before this date, such preparations always showing leukocytes packed with cocci and also dense clumps of cocci not yet ingested. The picture is so characteristic that a diagnosis could in the majority of cases

be made by simply mixing some washed corpuscles, serum from the patient, and meningococci, and incubating the mixture for a short time without the use of any control.

(4) From the very definite nature of the results obtained it would seem likely that this method will prove of value: (a) in diagnosing sporadic cases of the disease; (b) in settling the etiology of posterior basic meningitis in infants; and (c) in determining the nature of a doubtful coccus.

(5) Two of the main elements on which the process of immunity in this disease depends are the opsonic and agglutinative powers of the serum. A therapeutic serum therefore having no opsonic or agglutinative power on the meningococcus could not be expected to have much value as a remedial agent in this disease. Several samples of serum on the market were tested by us and found to have neither opsonic nor agglutinative power. This result corresponds with the experience of their use.

Unrecognized Diphtheria in Children.—I. Friesner (*N. Y. Med. Jour.*, May 11, 1907) insists that careful examination of the nose should be considered quite as important as examining the throat, which has now become routine; and that, especially in those cases where the discharge is unilateral or persists, the possibility of a mild type of nasal diphtheria be borne in mind and proper precautions be taken.

Latent Diphtheria.—Myer Solis-Cohen (*Jour. Amer. Med. Assoc.*, July 6, 1907) believes that the prevalence of diphtheria is due to the lack of control over latent cases of diphtheria and over the so-called "carrier" cases.

Diphtheria may occur in a latent form without pseudo-membrane and with only slight symptoms.

Latent cases of diphtheria should be isolated until two successive negative cultures have been obtained.

All cases of sore throat should be reported to the health authorities and should be examined bacteriologically.

Infected "contacts" should be excluded from school or work and should not be permitted to frequent public places until two successive cultures have proved negative.

All who have been in contact with a diphtheria patient, whether at home, at school, or at work, should be examined bacteriologically.

Disinfection of fomites and terminal disinfection of rooms and their contents is insufficient and reliance thereon treacherous. Animate carriers of infection are more dangerous than the inanimate.

Formic Acid in the Treatment of Diphtheria.—Claude B. Ker and David H. Croom (*Edin. Med. Jour.*, June, 1907) say that, considering that the asthenia, so characteristic of diphtheria, might be favorably influenced by the use of formic acid, this drug was given systematically during 1906 to all diphtheria patients in the Edinburgh City Hospital, instead of strychnine. It was administered in the form of a 25 per cent. aqueous solu-

tion. Of this, doses varying from five to twenty minims were given in water every four hours. A comparison between the years 1905 and 1906, omitting from the latter year fifty cases which were not treated with formic acid and of which the percentage mortality was eight, the paralysis rate being 6 per cent., shows:

Year.	No. of Cases.	Percentage Deaths.	Percentage Fatal Heart Failures.	Percentage Paralysis.	Percentage Albuminuria.
1905	507	8.0	3.07	9.09	23.7
1906	412	6.2	1.94	2.9	15.7

The results obtained seem distinctly encouraging, particularly in relation to the occurrence of cardiac failure and paralysis. Formic acid is at least an admirable tonic and may be used in the treatment of diphtheria with safety and to the great advantage of the patient.

Alimentary Levulosuria in Diphtheria—U. Franchetti (*Riv. di Clin. Ped.*, May, 1907) says that one of the latest methods of indicating the perfection of function of the liver is alimentary levulosuria. The author has made observations of this method in forty-one cases, thirty-three of diphtheria and seven of angina. Of these, thirty gave positive results when levulose was administered by mouth and tests were made. The author concludes that the test for levulosuria in diphtheria, both in the height of the disease and in convalescence is in most cases positive. It is always positive in cases of diphtheritic paralysis. It is not influenced by slight nephritis, bronchopneumonia, fever, or general symptoms.

Pathogenesis of Nervous Complications in Pertussis.—Durando Durante (*La Pediatria*, Aug., 1907) tells us that the various complications of nervous origin in pertussis are not rare. They consist of paralyses, peripheral, central, spinal, and bulbar, neuritis, and special sense troubles. The predisposing causes are debility, loss of sleep, loss of nourishment from vomiting, and the specific infectious element of the disease acting on the system of the child. The immediate causes are the violent cough, which increases the blood pressure at the time of the paroxysm, changes in the circulation, and hemorrhages into the brain and nervous centers. These lesions are sudden in onset, short in duration, and generally entirely recovered from. The commonest symptom is convulsions, which may be slight or severe enough to cause death. The frequent recovery indicates that there is no permanent organic lesion. Another explanation that has been given of the occurrence of these symptoms is the chronic carbonic acid poisoning which results from partial asphyxiation.

Incontinence of Urine and Feces.—After an interesting discussion of the etiology and symptomatology of incontinence of urine, George F. Still (*Clin. Jour.*, April 24, 1907) says regarding its treatment, that although occasionally some abnormality may be found in the urine, in the vast majority of cases it is perfectly normal and gives no guidance whatever. The presence of thread-worms is an important indication for treatment. In the majority of cases of enuresis nothing is more generally useful than belladonna. At any period beyond infancy m v of the tincture should be the initial dose, or even m x for a child over five years if the parents are intelligent and forewarned of possible toxic symptoms. The dose should be increased by m iiss every fifth or sixth day until the enuresis is controlled or the limit of tolerance is reached. The dose should be continued at m iiss above the minimum efficient dose for two weeks and then reduced m iiss each week. If m xx are reached without complete control it is well to add tincture of lycopodium m xiiss and increase this by m iiss as required, up to m xx or more. *Nux vomica* is helpful either alone or added to the above in large doses such as m v for a child of five years. *Rhus aromatica* may succeed if belladonna fails, giving m x three times a day to a child of five years and increasing to m xv-xxv . Fluid extract of ergot m xx t. i. d. for a child of five, m xxx for an older child, may be effective, usually combined with *nux vomica*. Where a psychical impression is desired the galvanic current is best, one pole over the sacrum and one over the pubes. Cessation of enuresis after removal of adenoids may be due simply to psychical impression. Circumcision also usually has no beneficial effect on enuresis. During the latter half of the day the fluids ingested should be limited and none given after the last meal. When there is difficulty in digesting carbohydrates or a condition of intestinal catarrh, the reduction of starch and sugar and especially the exclusion of potato and raw fruit are helpful. The general health is of great importance. Enuresis often ceases in a strange environment. Incontinence of feces is akin to enuresis and sometimes associated with it. It occurs almost always in highly nervous children, but, as in enuresis, there is often a local exciting cause in some abnormal condition of the intestinal contents. The most effectual treatment is the administration of Dover's powder, gr. iss-iii t. i. d., according to age, and a mixture of belladonna with potassium bromide, to which arsenic and *nux vomica* may be added in some cases. All food likely to irritate the bowel, especially fresh or dried fruit, must be prohibited, and all drink should be given cold or only just warm.

Treatment of Acute Cardiac Affections in Childhood.—A. Baginsky (*Med. Rec.*, April 13, 1907) has found potassium iodide the most efficient of all remedies which he has employed in the treatment of acute inflammatory diseases of the heart, pericardium, pleura and lungs. Its effects in pericarditis seem

to be increased by the combination with mercurial ointment, and in the condition of complete helplessness which the practitioner is often compelled to acknowledge in the presence of the rheumatic cardiac diseases, this method of treatment may safely be commended. The endocarditis which manifests itself in these cases by very stormy symptoms may be effectively combated by the ice bag and the internal administration of digitalis.

The writer has employed venesection in two cases, one of acute endocarditis complicated with pericarditis, the other of acute cardiac dilatation with violent heart action, with some success as regards the pain and overactivity. The disease itself did not seem to be in any way affected, and the pain and dyspnea returned. The second case ended fatally. He does not recommend the procedure, on account of the difficulty of controlling subsequent hemorrhage and the danger of septic infection of the leech bite. When the dyspnea is extreme, the pulse small, frequent, and irregular, the value of aspiration is undoubted. In those cases where the pericardial exudate is combined with an even larger one of the pleural cavity, it is advisable to combat the dyspnea by doing a paracentesis of the chest before that of the pericardium is attempted. It will often be found that the dyspnea disappears, and then puncture of the pericardium is rendered unnecessary.

The application of vesicants over the cardiac area is cruel and inefficient. A proper degree of diuresis should be provided for, which may be accomplished by the administration of the alkaline mineral waters without the use of stronger diuretic measures.

Independence of Development of the Brain in Subnormal Growth of the Infant.—G. Variot (*Ann. de Méd. et Chir. Inf.*, April 1, 1907) says that in a physiological state the brain obeys special laws of growth. At the age of two years, although the child is physically ill developed, the brain has attained almost its final development. The precocious growth is supposed to account for the frequency of the localization of the bacillus of tuberculosis in the brain. In cases of diminished growth when the child is very small for its age it is easy to see by the expression of the face that the recognition of persons and things is quite as perfect as would correspond to the child's age instead of its development. The retardation of development has not been nearly as great in the brain as in the other organs. Measurements of the skull made after death, and weighings of the brain show that the dystrophic process has not affected the central nervous system as it has the rest of the organism. The relative independence of development of the nervous system accounts for marked psychomotor disturbances in children affected with subnormal growth.

Hydatid Cysts of the Liver in Children.—L. Thevenot and Barlatier (*Gaz des Hôp.*, April 22, 1907) tell us that hydatid

cysts of the liver are rare, in children, hence they describe two cases observed by them in a child of twelve years, and in one of eight. This is the most common age for the appearance of such cysts, due to the form of food taken rather than to the contact with domestic animals. The eggs come from meats and fruits that are contaminated and are not washed before being eaten. The tumor is fluctuating and often of enormous size. Operation is the only possible treatment, and the operation of choice is decortication with marsupialization.

Epilepsy in Childhood.—George S. Keeling (*Brit. Jour. Child. Dis.*, April, 1907) says that the pathology of epilepsy appears to resemble in some respects that of cerebral diplegia, chorea, paralysis agitans, neurasthenia, myoclonus and migraine.

Etiologically, rickets is an important factor in the causation of epilepsy.

A variety of epilepsy, which may be termed toxic epilepsy, is chiefly gastro-intestinal in origin.

Reflex epilepsy is apparently rare; peripheral irritation probably plays a very small part in the production of the fits.

The effect of measles on epilepsy is uncertain.

Chorea is very rarely found associated with epilepsy.

Infantile paralyses, especially the congenital forms, are closely related to epilepsy.

An injury or a fright is frequently the exciting cause of a fit. Instrumental delivery may be followed by paresis with subsequent epilepsy.

Enuresis is an occasional sequela of epilepsy.

The disease known as night terrors is probably a mild form of epilepsy.

The three affections most frequently found in the family history of epileptics are epilepsy, migraine and alcoholism.

Migraine appears to be very closely allied to epilepsy, both in the family history and symptomatically.

The differential diagnosis between Ménière's disease and epilepsy is occasionally difficult.

Temperature Variations in Hydrencephalocoele.—In a case of hydrencephalocoele and spina bifida dying twenty-five days after birth, B. K. Rachford (*Arch. of Ped.*, May, 1907) noted, during the three or four days preceding death the influence of artificial heat upon the body temperature, this rising in the course of a few hours to 107° or 108° F., under the influence of hot water bottles and other external heat, and then again as rapidly falling to 92° F. when the external heat was removed.

The explanation of these remarkable excursions in temperature under the influence of artificial heat may possibly be found in the fact that the feeble inhibitory centers of the immature and malnourished infant is the first portion of the heat regulating mechanism to give way under adverse conditions.

As the child grew feebler, and as its vital forces ebbed, the

body temperature was more and more influenced by the application of external heat.

Necrosis of Cranium Following Severe Burn.—W. W. Keen (*Annals Surg.*, May, 1907) records the following unique case. At seven months of age a baby fell into the open fire, so that the top of the head was in contact with the live coals probably for twenty to thirty minutes. The whole top of the head sloughed off about six months later, including a large portion of both frontal bones, the two parietal bones, and a part of the squamous portion of the right temporal bone, leaving an area 17 by 11 cm. uncovered by bone. Soon after the accident the boy had nine convulsions; then was free from them for over a year. He then began to have distinct epileptic attacks which have continued and increased in severity and frequency, regardless of any known influence, at an average of 400 attacks a year.

He began to go to school at seven years of age and appeared to learn rapidly. His memory was excellent till he was about eleven years old, when his epileptic attacks became more frequent and he became stupid. He was, therefore, removed from school, and he has forgotten most of what he learned and is becoming more and more deficient mentally. While at school he learned to read and write, but in the last three years he has lost the ability to do either.

At 14 years of age the opening in the skull had contracted to 8 by 5 cm. Not only had contraction taken place in the horizontal plane, but a deep furrow on top of the head showed that marked contraction had occurred in the vertical plane though the head was of the average size of a boy of fourteen. Keen attempted to make the entire calvaria movable so that it could be lifted like a lid on top of the head. If, then the brain had any power of expansion it might lift the calvaria and so get more room. This was done by a circular craniotomy, leaving a gap of 7 mm. entirely around the head.

The apparent immediate result seemed to promise considerable improvement, but after two years it appears that this will be slow and not as great as could be desired. Yet the lessened frequency of his epileptic attacks is a positive improvement and he is certainly somewhat less dull than he was when first seen by the writer.

Lactoserve in the Dieto-therapeutics of Acute and Chronic Digestive Disturbances in Nursing Infants.—Gaetano Finizio (*La Pediatria*, April, 1907) described the preparation of lactoserve, a new food for infants that are unable to take milk or broths. It has been found that infants with gastro-intestinal troubles cannot tolerate babeurre, and those that can do so lose in weight, showing that there is a lack of nutritive material in the food. Lactoserve is made of a mixture of whole and skimmed milk, acidified with lactic acid bacteria. It is evaporated in a vacuum at 50° C., reduced to a powder, and mixed with sugar, flour, and vegetable albumin. It thus becomes a highly

nutritious food, on which the infants gain in weight. It never produces vomiting and is tolerated immediately after a period of twelve to twenty-four hours of the water diet, which should never be omitted as a preliminary. Intestinal putrefaction is lessened with the number of intestinal bacteria, and the toxicity of the feces is at once reduced. The author has obtained brilliant results in several cases of gastro-intestinal troubles in infants under one year, by the use of this food.

Alcohol and the Infant.—Racul Brunon (*Bull. Med.*, May 15, 1907) says that from a nation of wine drinkers who were never drunk the French are fast changing to a nation of drunkards from the use of alcoholic spirits, which have taken the place of the wines of the country. These intoxicating drinks are given to the infant at the breast and the child at school, while the unborn infant is affected by the spirits drunk by the mother. The abuse of absinthe is most common at the present day. The alcoholism of the father is inherited by the child. In Switzerland the nursing mother gives her infant grog before going to the field, in order that it may sleep during her absence. Coffee and brandy are given to the children in the nursing bottle with a long tube, which they may suck at will. Brandy is the first remedy given in sickness of any kind, especially for convulsions. Among the rich the nurse is gorged with wine and beer to make her produce more and better milk. Pregnancy becomes an encouragement to drink. The number of infants intoxicated before birth is daily increasing. It is a slow intoxication resulting in cutaneous and intestinal diseases, agitation, insomnia, constant crying, bad temper and diminished growth. Deaths from enteritis and eclampsia are appallingly frequent. Epilepsy, tuberculosis, and crime are the portion of the child of eighteen years. Absinthe is the poison of the adolescent. Almost all youthful criminals in Normandy are absinthe drinkers. The number of children diminishes and that of crimes increases. The results of this state of things are so far reaching that the stature of the race has diminished, and the required height for service in the French army has had to be lowered.

Cause of Infantile Atrophy.—A. H. Wentworth (*Jour. Amer. Med. Asso.*, July 20, 1907) showed experimentally that the material obtained from the intestines of atrophic infants possessed little or no power to stimulate the flow of the cat's pancreatic juice, indicating either a marked diminution in the strength or in the quantity of secretin present, whereas the secretin from the intestines of well-nourished infants and children invariably produced activation of the cat's pancreas. Moreover, the preparations from the intestines of new-born infants also failed to activate.

It seemed possible that the stomach of atrophic infants did not produce enough hydrochloric acid to stimulate the duodenum to produce an adequate quantity of secretin, and that infants that had adjusted themselves to cow's milk secreted enough hy-

drochloric acid in their gastric juice to produce the quantity of secretin needed normally to activate the pancreas.

The writer investigated, therefore, the hydrochloric acid content of the stomach contents of atrophic infants and compared them with the analyses of the stomach contents of normal infants.

The hypothesis as to the cause of infantile atrophy which, as the result of this research, he proposes may be briefly summarized as follows: The digestive functions of the very young infant are not activated because it does not receive the only food capable of adequately activating them, viz., human milk. This leads the stomach to secrete an inadequate gastric juice. The absence of an adequate gastric juice in turn does not stimulate the duodenum to form normal secretin. This defective secretin insufficiently stimulates the pancreatic secretion, and leads probably to as yet unstudied disturbances in the function of the gut lower down.

Weight of Breast-fed Infants.—J. P. C. Griffith and J. C. Gittings (*Arch. of Ped.*, May, 1907) discuss, on the basis of 226 personal cases and 12,312 from other sources, the weight of breast-fed infants. They conclude that, while the initial loss of weight in a new-born infant cannot be entirely prevented, it can be materially lessened by the exhibition of the milk of another nursing woman until the mother's secretion has been established, yet that this offers no very great advantage, and certainly the difference in the rates of gain does not justify the administration of any artificial food during the first days of life.

Backward and Defective Children.—H. Shoemaker (*N. Y. Med. Jour.*, May 18, 1907) believes that backward and defective children would derive the greatest benefit by:

- (1) The relief of all physical defects so far as possible.
- (2) Placing a teacher in charge of a limited number of children.
- (3) Requiring a home report, from personal observation of the teacher in charge of the actual work, in order that cruelties and neglect may receive proper investigation, so that a teacher may not unwittingly be trying to force an infant mind.
- (4) Making the session shorter.
- (5) Demanding a concession from the parents, which may be implied by admission to the special class, for the correction of all physical defects in their children.

(6) The employment of manual training, which may create dexterity, even though the power to originate is lacking.

(7) Physical culture and outdoor gymnastics, when possible.

Bringing Up and Survival of Premature Infants at the Charité.—Ch. Maygrier (*L'Obstet.*, July, 1907) says that congenital feebleness occupies a second place in the causes of infant mortality between gastroenteritis and pulmonary affections. It is evident that prophylaxis, by protecting and assisting pregnant women to carry their infants to term and preventing unnecessary fatigue is most important. Until this is attained it will be nec-

essary to endeavor to bring up these premature infants. The treatment to be carried out includes prevention of cooling below normal temperature, appropriate feeding, principally with mother's milk, and their preservation from infections. The child should never be separated from the mother unless this is unavoidable. At the Charité, from 1898 to 1907, 616 premature infants were born, and remained until they were in a condition to live under ordinary care. The percentage of survivals was 83.80 per cent. The fragility of premature children seems not to be a reason to despair of raising them under proper circumstances. The defect in weight is soon corrected under mother's milk. After the dangers of the first few months are past these infants do as well as other children. The mortality of 146 premature infants weighing 1,500 grams and under was 3.42 per cent. Of these 116 took breast milk alone, eighteen mixed feeding, and twelve artificial foods. The consultations for mothers were of the most inestimable value in keeping these children in good condition. They have reduced the percentage of death from congenital feebleness.

Chloroma.—Frank M. Pope (*Lancet*, May 18, 1907) reports a case of chloroma in a boy of fourteen. Microchemical analysis of the pigment found in the growths, by W. E. Reynolds, suggested the presence of a substance analogous to creatin and creatinin. He noted the presence, in exactly the places in which the pigment was found, of a bacillus resembling the bacillus mallei in form and staining properties. It was chiefly abundant in the nuclei of the cells immediately adjacent to the growth, in the nuclei of the cells forming the growth, and in the cytoplasm of the hepatic cells and of the endothelioid cells in every organ. Reynolds is inclined to believe that it is pathogenic and not merely saprophytic.

Sacral or So-called "Mongolian" Pigment Spots.—Joseph Brennemann (*Arch. Ped.*, June, 1907) reviews the literature of the sacral or so-called "Mongolian" pigment spots of infancy and early childhood, bluish areas found in the sacral region, due to the presence of dark pigment in the corium. While blue or grayish-blue in the lighter colored races, they vary, in the negro, from slate to plum color. They have been described as characteristic of the Mongolian races and by many have been regarded as a sign of negro blood; but as they have been found in pure Caucasians the writer says that they can no longer be considered as exclusive race characteristics. They are to be accorded the same value as other racial traits—color, hair, features, etc. Their presence or absence in given cases leads to highly probable but not positive determination as to race or to degree of contamination. This is of especial interest to us in this country where there is such a mixture of races.

Goiter in the New-born.—Plauchu and Richard (*Gaz. des Hôp.*, May 11, 1907) finds that goiter is not exceedingly rare in infants. Its size may vary from that of a small nut to that of

the end of the thumb. It extends across the neck, or is shaped like two pyramids with the apices upward and backward. It may be vascular, which is the commonest form, parenchymatous, or cystic. The vascular tumors are absorbed soon after birth. They are composed chiefly of dilated veins. Large sinuses are found in the glands and few islands of cells. The parenchymatous form is rare, and only one case is reported after autopsy. The trachea may be so much compressed as to produce cyanosis. The esophagus may also be compressed. In general the tumor is hereditary, and congenital. Goiter in the fetus is sometimes a cause of dystocia. The symptoms aside from the presence of the tumor are dyspnea, cyanosis, difficulty in swallowing, cough, and refusal to nurse. This affection in the new-born child is exceedingly grave. Death results in the majority of cases, depending on tracheal stenosis. The goiter may be gradually absorbed. It may be necessary to invert the infant to relieve the attacks of cyanosis, and tracheotomy may become necessary. Thyroidectomy is too severe an operation to be performed in such young children. Exothyropey is to be preferred and has good results.

Phagocytic Power of the Blood in Infants.—Gaetano Finizio (*La Pediatria*, March, 1907) tested the phagocytic power of the blood in an infant attacked by empyema due to the staphylococcus pyogenes aureus, and in one suffering only from slight dyspepsia. He used staphylococcic pus from another source for comparison tests. The index in the baby with empyema was always higher than in that of the other baby. It was higher in both babies for the empyema pus than for the other sample. It was always within the limits observed by Wright. The author concludes that the index is lower for the more virulent staphylococcus, which is less subject to the phagocytic power than those of weaker virulence. The phago-cytic index is always higher in the healthy child.

Bier's Stasis Method in Osteomyelitis and Tubercular Osteoarthritis.—Tommaso Costa (*Gior. Internat. delle Sci. Med.*, May 31, 1907) has used the passive hyperemia method of Bier, produced by elastic band around the limb above the joint, and applied from one-half hour to three or five hours in cases of osteomyelitis and tubercular osteoarthritis. In cases of much disorganization, with many sinuses, and much necrosis, it is a positive disadvantage, and destroys tissues that might be useful in an operation for excision of the joint. In closed lesions not communicating with the external air the method is of value, and some excellent results have been obtained. Used after operation the method is of value, especially after a bloody operation.

Thymic Tracheostenosis.—Chevalier Jackson (*Jour. Amer. Med. Assoc.*, May 25, 1907) reports a case of severe expiratory dyspnea in a child of four years in whom the x-ray showed an enlarged thymus. After tracheotomy the bronchoscope showed

the tracheal lumen to be not over 2 mm. on inspiration and 1 mm. on expiration. The dyspnea ceased immediately upon passage of the bronchoscope. A long tracheal cannula was made and worn with comfort for four weeks until the thymus was removed. The writer thinks that thymic tracheostenosis is a better term than thymic asthma for this class of cases. He says that the dyspnea in thymic tracheostenosis is worse in the erect position, and it is expiratory, as might be expected from the increased intrathoracic expiratory pressure, and as demonstrated tracheoscopically in this case. The mechanism of this was demonstrated by the flopping out and in of the elevated gland before it was severed.

A radiograph is a valuable diagnostic aid.

An absolutely positive diagnosis can be made with the tracheoscope. Upper tracheoscopy is probably not safe in these cases. Tracheotomy should be done under infiltration anesthesia, and should be high, so as to be as far as possible away from the thymectomy wound.

A long tracheal cannula, reaching to within a centimeter of the bifurcation, renders the breathing free and the thymectomy safe from risk of asphyxia.

Thymectomy is indicated, and is best done by the insertion of the little finger from above downward behind the sternum through a transverse incision after double sterno-cleido-mastoid tenotomy. The insertion of the finger should be of brief duration, as, though the patient with the long cannula inserted is safe from asphyxia, there seems to be serious cardiac inhibition, probably from compression of nerve trunks about the esophagus. One should be careful not to injure the pleura.

An almost complete thymectomy is without effect on either the blood or nutrition, as was shown in the writer's case.

Status Lymphaticus with Enlarged Thymus.—A. Friedlander (*Arch. of Ped.*, July, 1907) reports such a case successfully treated by the x-ray at two months of age. Twelve exposures were employed, the first three for one, three and four minutes, the rest for five. The thymus and bronchial lymph nodes diminished greatly in size.

The subsequent development of the child was normal, and the external lymph nodes and spleen are no longer enlarged.

Again, the fact that the child could successfully withstand such a trauma as the removal of tonsils and adenoids without shock would speak for a resistance fully up to the normal within two years after the x-ray treatment.

Hernia in Childhood.—Examination of 2,600 cases of hernia in children has led Edred M. Corner (*Amer. Jour. Med. Sci.*, June, 1907) to believe that a median ventral hernia between the upper parts of the divaricated recti is by far the most common and characteristic hernia of childhood, being present in 87 per cent. of all cases of hernia. Its importance has not been recognized owing to the fact that surgeons have made more

observations in the operating theater than in the out-patient room, and have, with few exceptions, never combined these two sets of observations. This median ventral hernia is almost invariably of an acquired character and is directly related to the pressure of gas production by intestinal fermentation. Any hernia or set of herniæ in any situation is more frequent when accompanied by it than when alone. Hence clinical experience shows that raised intraabdominal pressure is directly related to the frequency of inguinal herniæ, and, it is suggested, probably also to their initiation. It is further suggested that the true proportion of acquired to congenital herniæ is about two to one.

Ovarian Cyst in Infant.—C. W. MacGillivray (*Lancet*, June 1, 1907) records the successful removal of a multilocular ovarian cyst, the points of interest being:

1. The age of the patient at the time of operation, eleven months, the tumor having been first noticed at the third month. D'Arcy Power's case is therefore the only younger case recorded, his patient being four months old at the time of operation; but in his case the cyst was unilocular, with a long pedicle, and was easily removed through a small incision.
2. The enormous size of the tumor and the fact that though it formed one mass it was in reality made up of two multilocular cysts with flattened sides, attached the one to the other by loose connective tissue, thus raising the question of its being a double ovarian cyst; the state of the child at the time of the operation prevented investigations being made as to the presence or state of the other ovary.
3. The retroperitoneal position of the tumor, as shown by the appendix, cecum, and ascending colon lying in front of it and stretched over its surface, and the fact that the posterior layer of the peritoneum had to be torn through in order to enucleate the tumor. As Kelly states, such a position points to the tumor being sarcomatous and directly contraindicates an ovarian origin.
4. The uneventful recovery of so young a child from such a severe operation.

Cerebral Hyperemia as a Factor in Therapeutic Action of Lumbar Puncture.—F. C. Eve (*Lancet*, July 27, 1907) during the past few years has always measured the intracranial tension during a lumbar puncture, and has been led to the provisional conclusion that relief of tension should be given therapeutic credit only in cases where the hypertension is considerable; and that where the pressure is normal or slightly raised the benefit which sometimes results from lumbar puncture should be ascribed to other causes. He advocates the predominant claims of one factor which has not received attention. That factor is the marked passive *hyperemia* of the cerebrospinal vessels which must inevitably result from the removal of any considerable quantity of cerebrospinal fluid. For, owing to the uncollapsible bony envelope of the central nervous system and to the inextensibility of its nervous and liquid contents, it follows that

for every ounce of cerebrospinal fluid removed an exactly equal quantity of blood will be added to the contents of the cerebrospinal vessels.

He reports an illustrative case of tetany treated by lumbar puncture, a healthy boy four years old. The onset was acute a fortnight before admission.

Treatment for twelve days consisted of tonics with open air day and night. Then five days of aperients and vermifuges in response to a history of worms eight weeks previously. Next, eleven days of energetic sedative treatment with chloral and bromide. The case had now a duration of six weeks with a month of hospital treatment without the slightest improvement. The writer stopped all other treatment and tried the withdrawal of an ounce of cerebrospinal fluid by lumbar puncture under chloroform. The pressure was normal (200 millimeters of water). Next day the child was more rigid, but from that time onwards improvement was rapid and complete.

The case convinced him as strongly as any single therapeutic observation could, that the withdrawal of an ounce of cerebrospinal fluid was responsible for the cure of this child. And since the pressure was normal, it seemed legitimate to conclude that it was the *hyperemia* which had favorably affected the nutrition of the disordered nervous tissues in somewhat the same favorable manner as it has been shown by Bier and others to act in more accessible regions of the body.

Diabetes in Children.—H. M. Fletcher (*Practitioner*, July, 1907) finds from the records of St. Bartholomew's Hospital for twenty-two years that twenty-nine or 5.2 per cent. of the diabetic patients were sixteen years of age or less, seventeen being males and twelve females. Heredity must be regarded as an important etiological factor. The Hebrew children do not seem to show as great a liability to the disease as do adults. In the majority of children no exciting or predisposing cause can be found. Skin affections are not very common in diabetic children. Vomiting is an important feature, constipation is common. Temperature is often subnormal, especially in severe cases with attacks of drowsiness. The course of the disease is conspicuously shorter than in the adult. In many cases the final symptoms occur without warning, often after some slight cause such as constipation, diarrhea, toothache, a boil or abscesses. Convulsions are rare. The treatment differs in no essential from that of adults. The chief distinction between the treatment of a diabetic child and of a diabetic adult, on which special emphasis should be laid, is that, in the case of the child, a strictly carbohydrate-free diet can rarely, if ever, be adopted without bringing about an increase in the acetone and aceto-acetic acid reaction, and a greater liability to coma.

Pneumococcus Arthritis in Infants and Children.—A. F. Furrier (*Arch. of Ped.*, July, 1907) presents the report of a case of pneumococcus arthritis in an infant sixteen months old and the tabula-

tion of twenty-seven previously recorded cases of this affection in infants and children. A study of these twenty-eight cases shows that the joint involvement is secondary to pneumonia in only about one-half of the cases. In one-quarter of the cases it followed otitis media, earache and coryza, bronchitis, measles, etc. In one-quarter of the cases the arthritis was primary while in the adult it is secondary to lobar pneumonia in about 90 per cent. of the cases. The diagnosis can be made only from bacteriological findings. The larger joints are most often affected.

The mortality in infants and children is about 50 per cent., including all cases. The cases that die, however, are those in which a general extension of the infection occurs. On the other hand, the cases in which the joints alone are involved, if seen early and carefully treated, generally recover.

Treatment includes: (1) Absolute rest in bed with fixation of the involved joints.

(2) General supporting medical treatment and nourishing diet.

(3) When signs of fluid are elicited, incision and drainage.

(4) If the patient does not improve after the abscess is opened, or if after a temporary improvement an exacerbation occurs, we must suspect a general extension of the infection. If the original focus of the infection has been thoroughly opened and is draining well, nothing more can be done. The mortality in such cases until now has been practically 100 per cent.

The writer expresses the hope that the mortality may be lowered by direct transfusion of blood when a general extension of the infection is suspected, employing the blood of a recent convalescent from pneumonia if possible. If transfusion cannot be done antipneumococcus serum should be tried. In severe cases, in addition to the regular surgical treatment at the site of the abscess, a combination of venesection and normal saline infusion should be tried if direct blood transfusion cannot be done.

Adenoids and Adenoid Tuberculosis.—E. H. While (*Amer. Jour. Med. Sci.*, August, 1907) has examined histologically, especially as to their relation to tuberculosis, seventy-five adenoids, and in twelve cases this was supplemented by inoculation of guinea-pigs. The percentage of adenoid tuberculosis thus found was 5.3. Of the twelve guinea-pigs inoculated, five died of sepsis; of the remaining seven, two were inoculated with adenoid showing histological tuberculosis. No guinea-pig developed signs of tuberculosis. It seems likely that either the virulence of the infection was not sufficient to overcome the guinea-pig's resistance, possibly an obsolete tuberculosis, or that since the foci were discrete and scattered a nontuberculous portion was inoculated.

The writer concludes that primary tuberculosis occurs in a certain proportion of all cases of adenoids. From the figures of other observers, and his own, this seems to be about 5 per cent.

In determining the presence of adenoid tuberculosis the histological method is the most satisfactory.

Tuberculosis does not appear to be an important factor in the production of adenoid hypertrophy.

Adenoids and tonsils are the important channels of infection in tuberculosis of the cervical glands.

In the development of pulmonary tuberculosis adenoids may sometimes be direct channels of infection, but their importance is probably more often indirect by predisposing to catarrhal inflammations of the upper respiratory tract.

Intussusception.—John D. Rushmore (*Amer. Surg.*, Aug., 1907) has made a study of 301 cases of intussusception, nearly all collected from the literature. The results of operation in these cases with reference to time of operation were:

	Recovered.	Died.	Death rate.
Cases reported in first twelve hours....	112.....98.....	14.....	12.50
Cases reported in second twelve hours, 136.....	82.....	54.....	39.70
Cases reported after twenty-four hours, 53.....	22.....	31.....	68.90
Total,	301.....	202.....	99..... 32.22

The writer says that intussusception is another name for internal strangulated hernia. The symptoms, except the tumor, are in almost all cases evident and striking even to the layman; and the diagnosis is therefore comparatively easy to the medical observer. Where the tumor is not easily felt, we fail in our whole duty to the patient if we do not employ a general anesthetic for diagnosis instead of waiting to recognize the tumor later without it. Treatment ought to be surgical and practised not only within the first twenty-four hours but within the first twelve hours, like the treatment of any other form of strangulated hernia, remembering that in those cases where gangrene occurs the process may be more rapid than in other forms of hernia. Laparotomy and manual reduction offer the patient the best chance of recovery. Mechanical agents in reduction short of direct manipulation, such as air, gas, water, oil, etc., while they are free from the danger of atmospheric exposure and handling of the gut, are objectionable for the reason that we do not know, without laparotomy, the condition of the intestine to be reduced, nor whether, except by waiting, it has been reduced. While young infants operated on for the relief of invagination show a relatively high mortality, with very early operative interference we may expect a low mortality—at present 12.5 per cent.

Noctambulism and Automatism in the Child.—H. Dauchez (*Arch. de Méd. des Enf.*, August, 1907) describes somnambulism as it occurs in the child as a reflex of cerebral or medullary origin, an association of ideas that are habitual, in which judgment does not intervene. Noctambulism of dream in action is frequent in the child, while diurnal automatism is peculiar to the adult. It is observed in children of parents that are alcoholic,

epileptic, or degenerate. Ambulatory automatism in which the subject escapes from himself is a symptom of adult life almost exclusively. Noctambulism in children is of all degrees, from simple gestures to rising and walking about. A reflex is not a malady, especially when there is no hereditary diathesis, and the prognosis is good in these cases. Noctambulism appears in adolescence, not in infancy. In this cerebral reflex there is a dissociation of the psychical centers, the senses alone remaining awake, and the higher brain functions such as judgment remaining asleep. Diurnal automatism, or ambulatory automatism, is a state in which the patient escapes from himself, goes out, and remains away for some days, acting in the person of another self. This condition does not exist in children. The child of epileptic, or hysterical parents enters on daylight somnambulism and remains unconscious of himself. This form is intermediate between noctambulism and ambulatory automatism. Ambulatory automatism may exist in the adolescent and is of worse prognosis. With a hereditary taint automatism may become diurnal and persist through life.

New Phosphorus Medication in the Treatment of Rickets.—Paul Sittler (*Revue Mens. des Mal. de l'Enf.*, August, 1907) has made use of several new preparations of phosphorus in rickets. By employing a combination of glycerophosphates of soda, lime and iron and with nucleinic acid, nucleate of iron, or nucleate of soda he has obtained excellent results. The best preparations to use are glycerophosphate of lime and nucleate of soda. Children less than one year of age take a powder of 0.1 gram of the nucleate and 0.05 gram of the glycerophosphate twice a day in milk or sweetened water. Older children take the medicine three to five times per day. The author believes that from this treatment he obtains better results when combined with hygienic and dietetic means than by any other treatment.

Temperature of Infants.—P. Nobecourt (*Rev. Mens. des Mal de l'Enf.*, August, 1907) finds that the normal temperature of the infant does not vary in different parts of the day. In adults there is a slight rise as the day advances, but in the child he finds that this rise does not occur until the child has begun to be active. He believes that this change in temperature has to do with the bodily activity in those that exercise. In disease the infant has the customary afternoon rise, as in gastroenteritis. In the infant the same temperature is maintained day and night. Feeding has no effect on the temperature. The disappearance of monothermia indicates a pathological condition.

Prognosis of Nephritis in Childhood.—E. Apert (*La Bull. Med.*, November 9, 1907) refers to the epidemic of scarlatina of last season as one that was mild but that was followed in many cases by nephritis. Many of these cases were so mild that the exanthem was not noted, and the first serious symptoms were those of nephritis. The prognosis in these cases is good, recovery

being the rule even when serious kidney lesions are present. The pathological anatomy explains the results. Lobular portions of the kidney remain healthy while the rest of the cortex is destroyed. These normal portions become hypertrophied so as to assume the function of those parts that are useless. The other kidney may also become hypertrophied. The author describes the kidneys of a child in whom one was almost entirely atrophied, as well as the lower portion of the other, while its upper portion was immensely hypertrophied.

Mastoiditis in Infants.—G. Nové-Josserand and Meurice Jacod (*Arch. Gen. de Chir.*, Sept., 1907) says that up to the age of two years the mastoid process and cells should be considered as a part of the tympanic cavity. The meatus is large, short, and rectilinear and oblique from above backward, the Eustachian tube is large, short, straighter, and more open than in the adult. The recumbent position of the infant allows of drainage from the pharynx into it, and thence into the ear. Thus infection of the mastoid occurs easily. The infection is generally unperceived. It may result from adenoids, otitis, and naso-pharyngeal catarrh. The microbic cause is unimportant, but the general health is important, since some conditions such as tuberculosis, infectious diseases of childhood, and gastroenteritis predispose to mastoiditis. Age has no great influence. The dimensions of the mastoid cell, which is often single, are about the same as in the adult. The condition found in mastoiditis is a pus pocket at the bottom of which is denuded bone. There are three forms; mastoiditis at the point of the process, mastoiditis involving the entire process, and mastoiditis that is diffuse and involves only the surface. Symptoms are slight; they are the appearance of a retro-auricular collection of pus, with little pain, and slight fever. As for complications, sinus involvement is not important, facial paralysis is rare, and meningitis occurs occasionally. The prognosis is good except in tuberculous subjects. Treatment consists of evacuation of the pus, scraping away the diseased bone, and drainage.

Chylothorax in Children.—The patient described by Dewitt H. Sherman (*Arch. of Ped.*, September, 1907) was a boy four and one-half years of age suffering from dyspnea on exertion which became more severe within a few days. The left chest was found almost filled with fluid, twenty-eight ounces of which were removed by aspiration and found to be chyle. The diet was made as fat-free as possible. Five days later the chest had again become full and symptoms urgent. Only twenty ounces were removed, with the idea that back pressure might be maintained by what was left and further leaking prevented, although such leakage had twice taken place when the chest was partially filled and had continued until the pleural cavity was well filled. Five days later the symptoms and signs had recurred and all the fluid that could be obtained, forty ounces,

was withdrawn. No recurrence took place and after two or three weeks the small amount left below the site of puncture had disappeared. No cause for the chylothorax could be found except a fall down stairs one month before the onset of symptoms. The eleven undoubted cases of this condition which have been reported are tabulated and discussed by the writer.

Torticollis.—E. H. Bradford and J. W. Sever (*Bost. Med. and Surg. Jour.*, August 22, 1907) present a study of the treatment of cases of acquired and congenital muscular torticollis at the Boston Children's Hospital since 1879.

They state that congenital or acquired muscular torticollis may be cured.

An open incision, with complete division of the two heads of origin of the sterno-cleido-mastoid muscle, is all that is necessary, except in unusual cases.

The horizontal incision below the clavicle in the line of the skin cleavage is the best to use, in that it gives adequate room and also gives the best cosmetic results.

Plaster-of-Paris is the easiest applied, holds the head in the corrected position, and allows ambulatory treatment, and is therefore the best immediate dressing.

The plaster cuirass should be worn not longer than two months.

The Buckminster-Brown brace, Thomas collar, or wire collar should be worn for an average of four months following the removal of the cuirass.

It is best to operate on cases between the ages of two and twelve years, to insure a good result, and prevent permanent bony deformity of the face and head.

Relapses in Diphtheria.—J. D. Rolleston (*Brit. Jour. Child. Dis.*, August, 1907) finds that relapses occur in a little more than 1 per cent. of all cases of diphtheria.

They are less frequent than late tonsillitis in convalescence from diphtheria.

They do not occur before the third week.

The frequency of serum rashes after re-injection is much greater, their appearance is earlier, and their phenomena more intense than usual.

Relapses must be distinguished from angina redux, scarlet fever, and late tonsillitis.

They are usually milder than the primary attack.

Comparatively small doses of antitoxin should be employed in the treatment of relapses.

The causation of relapses is obscure.

Experiments in General Therapeutics by Means of Anti-diphtheritic Serum.—Mongour (*Ann. de Méd. et Chir. Inf.*, October 15, 1907) describes cases of various general non-diphtheritic conditions that were successfully treated by injections of antidiphtheritic serum. Among these were anginas of non-diphtheritic nature. The effect of treatment was immediate,

cure rapid, and convalescence almost absent. There were no bad effects from the serum, no eruptions, or painful symptoms. Four cases of typhoid fever recovered after having shown grave symptoms. One case of septicemia of unknown bacillary origin, with abscesses, was cured. Three cases of pneumonia and one of broncho-pneumonia, three of pulmonary abscess after grippe, two of malignant scarlatina with much albuminuria, one case of indeterminate infection, and one of suppuration of the gall bladder were cured. The dose injected was variable, never more than twenty centimeters at one time. The results effected were so rapid as to make it probable that the treatment was responsible for the cure. We have not in this remedy a panacea for infections but a remedy that merits the use of physicians in other diseases than diphtheria.

Edemas in the New-born and the Nursing Infant.—M. d'Astros (*Rev. Mens. des Mal. de l'Enf.*, Sept., 1907) describes simple edema of the premature infant resulting from its weak and undeveloped condition. This begins, soon after birth, in the hypogastrium, and extends to the subpubic region and limbs. It is never generalized. The surface is not soft as is usual in edema, but does not pit on pressure, and is elastic. The edema lasts from a few days to several weeks, and passes away as the infant gains strength. There is no albumin in the urine. This type of edema is secondarily due to renal insufficiency, combined with imperfect respiration and circulatory stasis. Other edemas in the new-born are of an infectious nature. Infections of a septicemic nature, umbilical infections, broncho-pulmonary infections, etc., are the cause. This edema is soft and not elastic like the last form. Another form of edema results from hereditary syphilis. Pulmonary affections may produce it and digestive troubles of a severe nature. Finally true nephritis may cause edema.

ERROR.

IRREGULAR PULSE IN GANGRENE OF GALL BLADDER.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS:

DEAR SIR:—In your issue of November, 1907, page 574, your reporter makes me say that in the large number of cases of gangrene of the gall bladder which I had had I had noticed the symptom to which Dr. Ross, of Toronto, had called attention, namely; irregularity of the pulse. My real statement was that I had *not* noticed this symptom, and that I thought its occurrence in Dr. Ross' cases was simply a coincidence.

J. F. BALDWIN,
Columbus, Ohio, December 10th.

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ORIGINAL COMMUNICATIONS.

THE INFLUENCE OF THE CENTRAL NERVOUS SYSTEM
IN THE CAUSATION OF UTERINE HEMORRHAGES.*

BY

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(With Two Illustrations.)

"INTRACTABLE uterine hemorrhage" appears with striking frequency in recent literature as an indication for hysterectomy. This is surprising. Uterine hemorrhage is not a disease *sui generis*, but only a symptom. If in these cases, in opposition to our modern ideas of rational therapy, not a definite pathologic condition but a symptom justifies or necessitates this radical form of treatment, we seem justified in deducing that in certain instances of very persistent metrorrhagia the underlying disease either cannot be recognized or possibly cannot be named on account of a lack of an appropriate term in our medical terminology. The propriety of this latter deduction is proved by facts. Some of these cases appear under the name chronic metritis, but this term in the light of recent research does not designate a disease of separate entity but rather comprises a number of conditions which from the standpoint of etiology and pathology are essentially different from each other.

Most of the older writers emphasize the fact that the lack of satisfactory knowledge concerning chronic metritis, also named uterine infarct, uterine fibrosis, hypertrophy of the uterus, engorgement, etc., is due to the obvious scarcity of material on

* Thesis submitted to American Gynecological Society.

which to study the pathology of this disease, especially in its incipient stage. At present the conditions in this respect have thoroughly changed, and nevertheless we still are far from a satisfactory settlement of the question of the etiology and pathology of chronic metritis, and are still in doubt concerning the cause of some of those "uncontrollable metrorrhagias" which demand hysterectomy.

The microscopic study of uteri extirpated for this reason has shown that very often the endometrium is so slightly changed that these anomalies of the endometrium could not account for the persistent hemorrhage. More stress then was laid upon a study of the uterine wall. Findings, more or less common, in such uteri up to the present day have led to three theories by which the metrorrhagia is explained.

The oldest is based upon the presence in these uteri of a thickening of the tunica media of some of the arteries. This theory was first propagated by French writers, then further elaborated especially in Germany (Reinecke, etc.). This theory of the sclerotic vessels still plays an important rôle in recent literature, but steadily the belief is growing, that while possibly a factor of importance this sclerosis certainly cannot be regarded as the essential or only cause of the hemorrhage.

The second theory has been propounded by Theilhaber. It is based upon the observation that in the chronic metritic and the senile uterus the typical increase in the fibrous tissue of the uterine wall is accompanied by a distinct decrease of the muscular tissue. From this observation Theilhaber develops his theory of the relative insufficiency of the uterine musculature as cause of a metrorrhagia.

Anspach recently modified these two theories into a third new one, which may be termed the theory of the relative insufficiency of the elastic tissue.

These three theories are based upon certain histologic findings and in no way refer to the possibility of a simply functional disturbance as the cause of a uterine hemorrhage.

Just twenty-five years ago Mayerhofer expressed his surprise that the gynecologist has so completely lost sight of the fact that the uterus is a muscle, a fact in which the obstetrician always has been so thoroughly interested. Emmet has called the uterus an erectile organ and recent histologic investigations (Keiffer) have furnished convincing proof for the correctness of this contention. The uterus certainly contains a very large number of

blood-vessels and very promptly reflects the effect of vasomotor influences.

In my opinion these two facts deserve very careful consideration in an attempt to explain obscure uterine hemorrhages. They obviously are dependent upon nervous influences, and anomalies in these influences could possibly account for certain forms of metrorrhagia.

In the following an attempt is made to show how functional disturbances of the uterus may be brought about by anomalous impulses transmitted to the genital organs from a normal or diseased central nervous system.

Before entering into a discussion of this problem I may be permitted to give the history of a case of intractable uterine hemorrhage which necessitated hysterectomy.

Mrs. F. E., seen for the first time February 15, 1906. Patient is twenty-seven years old; was pregnant five times. Gave birth to four children at full term, the youngest being two years old. Last pregnancy ended beginning of December, 1905, in third month of gestation, as spontaneous abortion.

Patient began to menstruate when fifteen years old; menstruation always very regular, every four weeks, lasting about seven days; flow always rather free, at times clots are passed. Never any pain.

Never seriously sick. Just before she married she had a few convulsions which by the attending physician were diagnosed as hysteric. No convulsions of any kind since she is married (nine years). In good health since marriage. Never any female trouble. Function of bowels and bladder normal.

During her last pregnancy which began late in September, 1905, she suffered from excessive vomiting. Abortion occurred beginning of December without known cause, positively not criminal. The attending physician saw the fetus. On account of a very severe hemorrhage this physician a few days later made a curettement. She continued to flow and about Christmas a second curettement was performed. No result. Patient was sent to hospital and beginning of January the third curettement was made. Up to beginning of February two more curettements were performed, but patient continued to flow. At no time since the abortion was the patient free of a hemorrhage. There never was observed any rise in temperature. Patient complains of a "terrible" cramping pain all over abdomen especially in the left side.

Physical Examination. Patient does not look very anemic. Percussion and auscultation of lungs and heart show normal conditions. Bimanual examination proves rather unsatisfactory on account of the extreme sensitiveness of the patient. Uterus lies in movable anteversion, and is enlarged. Appendages cannot be palpated. Bloody discharge from uterus. Examination with speculum negative.

The whole behavior of the patient during the examination, etc., suggests the advisability of making a careful examination of her nervous system. Pupils of equal size, react normally. Conjunctiva bulbi absolutely anesthetic, conjunctiva corneæ hypæsthetic, pharynx anesthetic. Areas of anesthesia are found over almost the entire face, and portions of the abdomen, with distinct hyperesthesia in ovarian region, especially on left side. Anesthetic areas on the dorsal side of hands with about normal sensitiveness along ulnar side of hands and arms. Patellary reflexes increased. Typical tubular field of vision. The field of vision is considerably reduced and is found practically of same size in distances of 50, 100 and 150 cm. respectively. Thus the diagnosis hysteria was positively established.

In view of this fact it was decided first of all to watch the patient carefully in order to exclude malingering and positively ascertain the fact that she is actually flowing continually. The patient was visited repeatedly and at every visit subjected to an examination. Later when patient again entered the hospital, her vagina was tightly packed with gauze strips which were marked or put in in such a manner that any tampering with them would have been recognized. In this way, I was able to ascertain beyond doubt that there was a continuous bloody discharge, varying in amount but never ceasing. All therapeutic efforts failed. In view of the possibility that her metrorrhagia may be a hysteric one, strong suggestion was used, and a general hygienic treatment instituted, all in vain. Since up to this time no histologic examination of any scrapings had ever been made, I finally yielded to the insistent demands of the patient and made another (the sixth) curettement on March 6, 1906. Under anesthesia the uterus was found to be enlarged, the increase in size of the organ apparently being due to a uniform thickening of its wall. Length of uterine cavity only 8 cm. Left ovary is a little enlarged. Scrapings are placed in Zenker's solution. Microscopic findings: Endometrium is almost of normal appearance. No marked small cell infiltration. The

glands seem to stand a little farther apart than normally, as the result of a slight increase in the amount of interstitial tissue. In certain places the epithelium shows an irregular proliferation. No signs of malignancy.

Immediately following this curettement the patient vomited persistently for nine days. The patient during this time apparently did not retain the smallest amount of food. She vomited after every attempt to give her even a teaspoonful of water, nevertheless she looked well and had a diuresis of about twenty to thirty ounces per diem. It was obvious that the patient secretly obtained liquids and food, but we did not succeed in ascertaining the source. During this period of hyperemesis the patient occasionally vomited clear red blood, and also passed blood from the rectum. Very careful examination of her mouth, throat and nose did not reveal the true cause of these hemorrhages. The hyperemesis was finally suddenly stopped when *on her urgent request* her stomach was washed out. During this time most peculiar temperatures were recorded by the attending nurse. Once the thermometer registered 110 degrees, the pulse rate being about normal. The cause of this rise of temperature was easily recognized, and the temperature remained normal when the hot water bag had been removed before the thermometer was inserted. A very exact examination of her urine and blood made at that time showed absolutely normal conditions. During the five weeks the patient remained in the hospital subsequent to the curettement, the uterine flow persisted continually, apparently uninfluenced by the curettement. The patient was finally sent home, against her wish, since she insisted upon another curettement. During the next few months the efforts were continued to check this hemorrhage by means of general and local treatment. Ergot, stypticin, styptol were used internally and hypodermically, concentrated permanganate solution, melted antipyrin and salol, tincture of iodine, and strong formalin solution were applied to the endometrium. Vagina and even uterus were packed tightly, all forms of suggestive treatment tried—all in vain. The metrorrhagia continued, and at no time was the vagina found free from blood. In spite of this hemorrhage the patient did not become anemic. An examination of her blood showed normal conditions. In the beginning of June the hemorrhage became much stronger, the patient more than ever before complained of pain. Her husband insisted upon some treatment which would finally cure

his wife, and, therefore on June 14, 1906, a vaginal hysterectomy was performed. The uterus and left appendages were removed, the right appendages which appeared normal were left. Recovery was undisturbed. On the second day after operation, the patient began to complain of a very severe pain in the pyloric region and vomited blood. On inquiry the fact was ascertained that the other woman who shared the room with this patient had a gastric ulcer. With the removal of my patient into another room the symptoms of a gastric ulcer promptly disappeared.

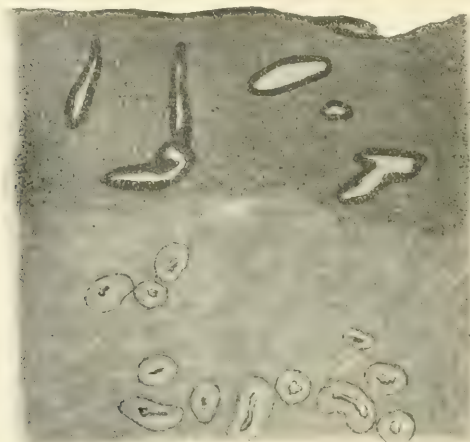


FIG. 1.—The glands in the endometrium stand rather far apart; the vessel walls are slightly thickened.

Ever since this operation, the patient has felt perfectly well. She has gained in weight and has no pain whatever.

An examination made in March, 1907, showed the hysteric symptoms practically unchanged.

Brief Description of the Specimen.—The uterus is slightly enlarged, 10.5 cm. long, of normal consistency, does not contain any nodules. Endometrium almost normal in appearance. Uterine wall is thickened, twenty-eight millimeters. Left ovary contains two small cysts; left tube is perfectly normal.

Brief Description of Microscopic Findings.—Sections were

stained with hematoxylin-eosin, Mallory's, Van Gieson's and Weigert's elastic tissue stain.

The endometrium is practically normal, showing only in places signs of an interstitial endometritis. (Fig. 1.)

Concerning the proportion existing between connective and muscular tissue in the mesometrium no noticeable deviation from about normal conditions can be ascertained.

In many of the larger vessels of the uterine wall the thickening of the media is well marked.

The elastic tissue seems well developed in all portions of the mesometrium, and is distinctly visible in the thickened media of most arteries. (Fig. 2.)

We then may summarize the essential features of this case as follows: In a patient suffering from hysteria a uterine hemorrhage, which had started subsequent to an abortion or a curettement, persisted continuously in spite of all therapeutic efforts for six months. A hysterectomy was finally the only resource left. The microscopic examination of both the endometrium obtained at the last curettement and that found in the removed uterus did not reveal any marked pathologic changes. The uterus did not contain any neoplasm (a chorioepithelioma having been suspected). The following other known causes of uterine hemorrhages could be excluded in this case: Disturbances in the circulatory system due either to heart failure, renal lesions or obstructions in the portal system; functional disturbances of heart action; such systemic disease as diabetes, chronic alcoholism or morphinism, hemophilia, syphilis, etc. Masturbation or *excesses in venere* (Bossi, Koblanck, etc.) were positively denied.

According to the three theories mentioned above we then would expect to find the cause of this metrorrhagia in certain histologic changes in the mesometrium, pertaining to either the blood-vessels, the muscular, or the elastic tissue.

A critical review, however, of the histologic findings in this case, together with a proper consideration of some of the arguments which have been made against the validity of both the sclerosis and muscular insufficiency theory (Shaw) in my opinion leads to the conclusion that in this case the findings do not offer a plausible explanation of the unusual hemorrhage.

There are three arguments which at present can be advanced against the tendency to lay too much stress upon the sclerotic condition of the vessel walls: 1. In none of the uteri so far examined have ruptures of such vessels ever been observed



FIG. 2. This section, taken from the fundus of the uterus, shows an approximately normal development of the elastic tissue. (Weigert's stain.)

which actually could account for the metrorrhagia. 2. These sclerotic changes are essentially different from the typical arteriosclerotic changes found in patients suffering from a general arteriosclerosis or in senile uteri (Theilhaber, Anspach, Shaw, etc.). 3. Sclerosed vessels can be found in uteri with perfectly normal menstruation, and may be absent in uteri extirpated on account of uncontrollable hemorrhages (Shaw). Such sclerosis, in fact, is an almost characteristic feature of the multiparous uterus (Pankow).

In consideration of the fact that my patient did not show any symptoms of a general arteriosclerosis, never had a syphilitic infection, was only twenty-seven years old, and five times pregnant, I feel justified in assuming that the changes in the media of some of the vessel walls were those of a physiologic sclerosis and not caused by a true arteriosclerosis.

The following objections can be made against the method adopted by Theilhaber, Meier and Lorentz for the estimation of the proportion between the muscular and fibrous elements in the uterine wall.

1. The efficacy of the method is entirely dependent upon the personal judgment of the individual examiner and his ability to estimate. Therefore the method is inaccurate. 2. The proportion between these two elements is constantly changing, physiologically, as the woman grows older and especially under the influence of pregnancies. In the individual case the findings cannot be compared with any standard proportion, and thus it is practically impossible to determine whether the estimated proportion is still within the limits of the possible physiologic deviation.

As far as my specimens are concerned it can be said, that apparently the connective tissue was hypertrophied, but possibly not more than could be expected after five pregnancies. In none of those portions of the uterus which were examined did the amount of muscular tissue seem strikingly small.

It must be mentioned in this connection that Shaw, who carefully followed the method of Theilhaber, came to results quite different from those obtained by Theilhaber, Meier and Lorentz. According to Shaw the chronic metritic uterus does not show an actual decrease in the amount of its muscular elements. Anspach also stated that he was unable to verify Theilhaber's claim. In my opinion, however, the work of these two investigators does not actually discredit Theilhaber's theory.

It possibly is unjustified to proclaim an atrophy of the musculature as a typical occurrence in chronic metritis, nevertheless, Theilhaber's idea of the relative insufficiency of the uterine muscle as cause of certain forms of metrorrhagia still seems entirely feasible. While Theilhaber attempts to support his theory by proving a partial atrophy and actual deficiency of the muscular elements, in my opinion the insufficient function of the musculature can be explained possibly in a more satisfactory manner as the result of anomalies in its innervation.

In reference to Anspach's theory I repeat the statement already made, that my sections would seem to prove the presence of an approximately normal amount of elastic tissue all through the uterus. A pronounced lack of elastic tissue certainly cannot be assumed in my case as the cause of the persistent hemorrhage.

There is then left, as possibly furnishing an explanation for her intractable metrorrhagia, only the fact that this patient suffered from a hysteria. The question whether the metrorrhagia in this particular instance was a simple functional one I wish to answer in the affirmative and I shall give in the following the available arguments for my contention that irregular and persistent uterine hemorrhages may be directly due to local vasomotor disturbances, or to an abnormal tonus of the uterine musculature brought about by an abnormal influence from the central nervous system.

The idea that the central nervous system may play a rôle in the etiology of functional anomalies of the uterus is not new. A study of the literature reveals the noteworthy fact, that while writers at the end of the eighteenth and the beginning up to about the middle of the nineteenth century constantly mention the possibility of a psychic or nervous influence in the causation of amenorrhea, menorrhagia and metrorrhagia, this thought has almost completely disappeared from the writings of later and recent authors as far as menorrhagia and metrorrhagia are concerned. Only occasionally in very recent literature is the existence of a hysteric uterine hemorrhage again acknowledged. This peculiar change of views, ending with a tendency to return to old ideas, in my opinion, must be ascribed to the influence of histo-pathology in the development of modern medicine. Simple functional diseases, disturbances without a visible pathologic-anatomic cause, without a responsible bacterium or cytotoxin have fallen into discredit. The history of medicine, however, shows clearly

that every new method of examination, every new theory which attempted to explain phenomena heretofore unintelligible, at first has found too wide an application. The literature of the last fifty years contains innumerable contributions to the question of chronic metritis and metrorrhagia. But in spite of the most painstaking study of minute histologic changes the actual cause of some forms of irregular hemorrhage from the uterus has not as yet been revealed. We, therefore, cannot be surprised to meet in recent contributions of Theilhaber, Kroenig, Vedeler and a few others the statement that there exists a functional, nervous metrorrhagia. Of course, this return to the old idea is to a certain extent due to the advancement of our knowledge concerning the physiology of the uterus.

It is my intention to present here all arguments extant in favor of a theory that in certain instances uterine hemorrhages are due to a faulty innervation affecting either the vasomotor nerves of the uterus or those nerve plexuses and centers which regulate the uterine tonus. It is obvious that these same disturbances of innervation must also show an anomalous influence on menstruation and on the contractions of the pregnant uterus. I, therefore, may be permitted to include in this consideration literature which tends to prove the etiologic relation of a direct psychic or indirect reflex influence of the central nervous system to amenorrhea, menorrhagia, abortion, sudden cessation of labor pains, etc.

The Dictionaire des Sciences Médicales, published in Paris between 1815 and 1820, gives a very clear status of medicine in the beginning of the nineteenth century. Volume 20 contains a chapter entitled: *Hémorrhagie utérine spasmodique*. Volume 33 one on *Métorrhagie spasmodique et ataxique* (by Monfalcon). These articles speak *in extenso* of the uterine hemorrhages so frequently caused in nervous women by psychic influences which lead to a "*spasm local de l'uterus*." The remarkable effect of antispasmodics and narcotics in the treatment of these metrorrhagias is emphasized, a fact which I shall further discuss. It may be interesting to state that one of the papers which refers to this important observation was published by Hoffmann, in 1730.

Among writers of about the middle of the past century Hewitt, Chiari, Kiwisch von Rotterau and others repeatedly mention in their text-books the possibility of uterine hemorrhage being caused by sudden emotions, continued depression, mental grief, imagination, etc.

Very clearly, more than twenty-five years ago, the essential points of our problem were set forth by Goodell in his "Lessons in Gynecology," a book remarkable in many respects. "Whenever we find a train of symptoms associated with a congested or otherwise diseased womb we jump to the conclusion that the uterine lesion is not a symptom, a sequence or a coincidence, but the factor, and at once proceed to treat it as such. We overlook the tyranny of woman's oversensitive organization, and underrate the influence of nerve perturbations or of a psychical disturbance." In an excellent chapter dealing with hysteria and neurasthenia the fact is emphasized that among the symptoms of these neuroses those of circulatory disturbances are most prominent. They consist of local anemias and local hyperemias. "The anemia of the reproductive organs is exhibited by amenorrhea, or by scanty menstruation, etc., the hyperemia by congestion, dysmenorrhea, menorrhagia and leucorrhea." Emmet cites a number of instances of sudden cessation of menstruation as the result of psychic emotion, and emphasizes the fact that all these patients were nervous. "When a sudden suppression of the menstrual flow occurs from emotional causes the result should be accepted as evidence of some previous defect in the nervous system." The importance of psychic influences upon the action of the uterus is mentioned in the works of Simpson, Schroeder and others. Schroeder thinks that "in analogy to similar observations, *e. g.*, on the intestines, this effect probably is due to a stimulation or paresis of vasomotor nerves."

Turning to literature of a more recent date one notes the difference in the attitude of either the gynecologist or neurologist towards the subject discussed here. The latter very often mentions the fact that abnormalities of menstruation, both in form of amenorrhea and menorrhagia, are common in the course of psychic disturbances or other diseases of the central nervous system, but it is evident that he is not particularly interested in this symptom. Windscheid and others complain of this utter lack of reliable reports concerning menstrual changes in diseases of the nervous system. The gynecologist, on the other hand, in spite of the vigorous efforts of Goodell and many other writers, still seems to be unduly influenced by the old, one could call it Hippocratic, idea of the development of all sorts of nervous disturbances as the result of primary gynecologic diseases. As a rule, he is satisfied to state in his reports that

the patient is "nervous" and very often he declares her to be "hysterical." The necessity of a familiarity with the symptomatology of all the more common diseases of the nervous system just begins to be appreciated by the modern gynecologist, and more valuable records of observations in this class of cases can be expected in the near future. The neurologist in this respect always will be at a disadvantage since the diagnosis and especially the positive exclusion of existing gynecologic anomalies demands a manual dexterity which can be acquired only by continuous practice.

According to Krafft-Ebing, Church and Peterson, Eulenburg, Ziehen, Craig, etc., disturbances of menstruation are frequently observed in insanity, especially in the primary stage of the disease. It is generally stated that amenorrhea is decidedly more common than menorrhagia. These disturbances are variously explained as expressions of constitutional or local disturbances of nutrition, as the result of an atrophy of the uterus or of atrophic changes in the ovaries, but in Krafft-Ebing's belief may be due to "disturbances of the vasomotor innervation," according to Church and Peterson to "profound changes in the general nervous system influencing the spinal centers for ovulation and menstruation" or, as Eulenburg states "often are of nervous or nervous-anemic origin."

In the course of certain diseases, *e. g.*, progressive paralysis (Petit) or melancholia (Craig, Ziehen) an even slight or only very temporary improvement (in the latter disease a recovery) is always accompanied by a prompt restoration of normal menstrual function. This observation in my belief is a very weighty argument in favor of a theory that these changes were brought about only by such temporary disturbances as anomalies in the vasomotor system or the muscular tonus of the uterus. It seems impossible to assume that organic changes in the uterus of such a nature that they would cause amenorrhea could so readily disappear. An assumption that the amenorrhea is the result of temporary anomalies in the function of the ovaries, possibly of a cessation of their internal secretion, on the other hand, could not be construed as an argument against the contention of the vasomotor origin of the amenorrhea, since the influence of the ovary upon menstruation by means of its internal secretion can be explained only on the basis of a vasomotor influence.

Interesting in this connection are also the observations of

Phenomenoff, Axenfeld, Mueller and Cushing concerning an amenorrhea which often precedes the first characteristic symptom of a brain tumor. Mueller in a critical discussion of all the possible causes of this phenomenon is able to exclude the following, at least for his five cases: That the tumor is the result of an amenorrhea according to an old and antiquated theory which is based upon the false interpretation of a correct observation; that both the tumor and the menstrual anomaly originate from a common cause, which would be possible, *e. g.*, in syphilis or tuberculosis; that the amenorrhea is caused by a cachectic or debilitated condition of the patient, which seems impossible in view of the fact that menstruation in these cases often disappears long before the tumor manifests itself by any symptoms; or that the amenorrhea is due to an atrophy of the uterus. This has been actually observed, *e. g.*, by Cushing, but in all cases of Mueller in which an autopsy has been made the uterus was found in apparently normal condition.

In Mueller's opinion then the only explanation left is that the tumor directly affects a portion of the brain which exerts a control over the function of the uterus or ovaries. Such an assumption is plausible because all functions which are controlled by the sympathicus (*e. g.*, micturition) to a certain extent also are subject to a voluntary or automatic regulation through cerebral centers. In view of certain observation the localization of the tumor seems of importance and a localization in or near the hypophysis seems specially prone to lead to this symptom of amenorrhea.

Mueller concludes with the statement that the question whether this amenorrhea is directly due to vasomotor disturbances which either change the general blood pressure or local circulation, or is indirectly due to changes in the function of the ovaries, can at present not be decided.

In my belief Mueller's conclusions can be narrowed down to vasomotor disturbances of a local nature as the only possible explanation at least for some cases. Temporary changes in ovarian function, as already explained, could only lead to temporary disturbances of menstruation. A persistent amenorrhea could be produced only by a continued cessation of ovarian function which would find its expression in an atrophic condition at first of the ovaries, later of the uterus. But Mueller found the genital organs normal at the autopsy and Hunter Robb reports two cases of pregnancy complicated by brain tumors.

That the general blood pressure cannot be of very great importance in the causation of uterine hemorrhages is proved by the fact that the menstrual flow starts at a time when an increased blood pressure has returned to its normal or even below its normal height, a fact which shall be considered later on. There is then left as the only possible cause of the amenorrhea an effect of the brain tumor upon those centers which control the tonus of both the vessel walls and the musculature of the uterus.

Patients suffering from chronic morphinism, as a rule, are amenorrhoeic (Eisenhardt, Windscheid). The uterus in these patients is small, but for some time the claim has been made that its reduction in size cannot be due to an atrophy because very often after even short withdrawal of the opiate the menstrual flow will promptly reappear. In such instances a small uterus with an apparently far-advanced atrophy has been seen to return quickly to its normal size, and soon to harbor a fertilized ovum. In the light of our present knowledge this shrinkage of the organ with the concomitant cessation of its menstrual function must then be ascribed to a persistent contraction of the uterine musculature. The distinctly hemostatic effect of so-called antispasmodics and narcotics in certain forms of metrorrhagia was known at the beginning of the nineteenth century. (*Dictionaire des Sciences Médicales*, Vol. 20, Paris, 1817.) Recently this question has again been studied by Lautand and especially by Rotter, the latter actually suggesting a systematic treatment of profuse menorrhagia by means of opiates.

It would seem obvious that, if the theory discussed here is correct, anomalies of menstruation must be extremely common in those diseases of the nervous system which are characterized by disturbances in the vasomotor apparatus. This certainly is true for the functional neuroses hysteria and neurasthenia. But in regard to other diseases the information which can be found in literature is extremely scanty. Cassirer recently has published a volume of more than 600 pages entitled: *Die vasomotorisch-trophischen Neurosen*. All the diseases belonging into this group are described with much detail and the fact is stated repeatedly that these diseases are much more common in the female. Innumerable histories of cases are given and hardly a dozen contain any reference to menstruation. According to Eisenhardt menstrual disturbances are common in myxedema. As a rule, menstruation disappears but in several

instances a menorrhagia or metrorrhagia has been recorded. Moebius states that Graves' disease does not manifest any noticeable effect upon menstruation. According to Eulenburg amenorrhea in this disease is not rarely observed, while it is claimed by Popoff that in the course of this disease hemorrhages from uterus, nose, gums, etc., are not infrequent. This same lack of reliable information may be noticed also in reference to *tabes dorsalis*. Leyden claims that marked changes of menstrual function do not occur, but Fehre who obtained the menstrual history of twenty-four tabetic patients found, that in nine of them menstruation was irregular and the flow profuse, in two it was scanty, in five the first menstruation had appeared rather early, at the age of ten to eleven years, and had always remained profuse, while in four cases the menopause appeared at an age between thirty and thirty-seven.

Before concluding the consideration of the neurologic literature on our subject we shall have to discuss the question whether the anomalies in the central nervous system in such cases could not be the effect rather than the cause of the disturbed menstrual function. An immense literature on this question has accumulated during the past decade. Its careful discussion here would be impossible, seems indeed, unnecessary. It cannot be denied that diseases of the female genital organs under certain conditions can lead to distinct symptoms of a neuro-pathologic nature or can aggravate a coexisting disease of the central nervous system, *e. g.*, transform a latent into an acute hysteria with sudden development of motor, sensory or psychic phenomena. The idea that an amenorrhea in itself, through the lack of a regular discharge of "poisonous" blood from the system, could cause insanity must to-day be regarded as thoroughly antiquated. Uterine hemorrhages, either menorrhagia or metrorrhagia, could result in actual disturbance of the nervous system only after a primary serious impairment of the general health of the patient. The arguments advanced by Rohé, Hobbs, etc., in proving an alleged close relation between diseases of the genital organs and the nervous system do not apply to our subject. This can easily be demonstrated. Hobbs on examining 220 insane female patients found that 188 had distinct lesions of their pelvic organs. In 132 of the 188 the lesion was diagnosticated as subinvolution of the uterus and endometritis. This seems striking, but we feel justified in expressing our doubts concerning the

reliability of this diagnosis. Hobbs states that the procedure of questioning these patients "as to the function of their reproductive organs was found barren of results owing to their deranged mental condition." He, therefore, had to depend entirely upon examination under anesthesia, or possibly, although not stated by him, upon observations made by the attending nurses. The latter must be assumed because bimanual examination alone is of rather limited value in the positive diagnosis of endometritis. One of the most prominent and important symptoms, menorrhagia or metrorrhagia, we assume must have played an important rôle in the diagnosis. Such an observation is, however, apparently incompatible with the statement found in almost every text-book of psychiatry that in insanity disturbances of menstruation are common, amenorrhea being the rule. The word amenorrhea is not even mentioned in Hobbs' article. Any reasonable doubt concerning the correctness of the diagnosis endometritis, which in 131 out of a total of 188 insane patients with pelvic lesions necessitated curettement, must, however, weaken to a considerable extent the claim of Hobbs and others that even slight disturbances of the genital organs could lead to serious disorders of the central nervous system.

Much less space will be occupied by a discussion of recent gynecologic literature on this subject. Modern text-books as a rule mention the fact that sudden emotions, continued depression, grief, etc., may cause the sudden cessation of the menstrual flow or a more or less persistent amenorrhea. The common observation is usually recorded that a change of surroundings, as, when girls enter college or country girls come to the city, often may result in a temporary suppression of menstruation. A notable case of this sort has been reported by Winter of a girl of twenty years who three times became amenorrheic for periods of three months, two months and six weeks respectively, when she came on a visit to Berlin. The mental factor in these cases is obvious, organic changes in uterus or ovaries would prevent the rapid restitution of a normal function of the uterus. Similar conditions apparently prevail in the amenorrhea of unmarried women who fear to be pregnant or of married women who are extremely anxious to have a child, observations which certainly are not uncommon.

The fact that emotions have a very marked effect upon the contractions of the pregnant and parturient uterus is discussed

in text-books of obstetrics in chapters which consider the causation of abortion or the delay in the second stage of labor. Interesting in this connection is a most peculiar observation which quite recently I have made on a patient who gave birth to her eighth child. Several days before the confinement she assured me that her labor pains would start at 6 P. M. and her baby be born three hours later at nine. "It has happened exactly the same way during the last five confinements." The first really painful labor pain appeared at six sharp. At quarter past eight the cervix was found completely obliterated, the head still movable above brim, membranes had ruptured at seven. The patient was lying on her bed, facing a large clock standing on a dresser opposite the foot end of her bed. Next to her bed sat her husband who consoled her during every labor pain that in so and so many minutes, figuring to nine o'clock, all will be over. Distinct uterine contractions, apparently very painful, came very regularly every five minutes. Her husband continued to console her, that she will have "just two more pains," and finally that "the baby will be born with the next contraction." And with the next contraction, without any warning, without any preceding bulging of the perineum which was in full view, the baby glided out—in occipito-posterior rotation, and in that very moment the clock struck nine. There is no doubt left in my mind that this labor stood under control of a strong mental influence created both by autosuggestion and the suggestion of the patient's husband.

In strict contrast to the comparative frequency in modern literature of references concerning amenorrhea as the result of psychic influences or anomalies, stands the scarcity of statements that these same influences could also cause uterine hemorrhages. Modern text-books of gynecology hardly ever mention this fact, nevertheless I believe that cases of this kind are not by any means rare. Since my interest has been aroused in this problem I had occasion to carefully observe several cases in which menorrhagia undoubtedly was due to mental emotions. I think that most suitable for such observations are hemorrhages from the puerperal uterus which apparently for some time retains some of its increased irritability, developed during pregnancy and manifested during labor. For instance, a hemorrhage during the lactation period, especially the appearance of the first menstruation, strikingly often follows a sudden emotion, or occurs at a time of worry, usually over the sick

infant. Recently I was called by a patient who nine weeks after her baby was born had her second menstruation. The patient is an extremely nervous woman, suffering from a rather severe neurasthenia with a few slight symptoms of hysteria. She never had a drop of milk in her breasts and the baby was fed artificially. Unsolicited she told me, that the trained nurse "who alone knows how to take care of my baby" expected to be called out to a case and "every time the telephone rings I just feel how the blood gushes out." I found her vulva pad stained with fresh red blood, undoubtedly the result of an arterial hemorrhage. The nurse within the next few days really was called out, and the hemorrhage became so severe, that I had to place the patient in bed for several days.

Of recent contributions which actually refer to or deal with nervous and hysteric menorrhagia and metrorrhagia mention must be made of those of Jolly, Menge, Lopez, Vedeler, Kroenig and Theilhaber. According to Kroenig menstrual anomalies like amenorrhea and menorrhagia in nervous and especially hysteric patients are, as a rule, due solely to vasomotor disturbances. In his belief this is proved by the following facts: The palpation of the genital organs reveals normal conditions, uterine scrapings show a normal endometrium, the menstrual anomalies improve and grow worse parallel with the hysteric or nervous symptoms of the patient, without any palpable local alterations. In such patients an amenorrhea of several months' standing will alternate with profuse menorrhagias and, in many of these patients, a general hygienic treatment yields a decidedly better result than local operative interference. In Kroenig's observation hysteric hemorrhages may reach a dangerous degree and even call for hysterectomy. Theilhaber states that menorrhagia is not uncommon in patients suffering from either hysteria or neurasthenia, especially in the presence of a relative insufficiency of the uterine musculature. Interesting is his observation that uterine hemorrhages, as a rule, begin about twelve to twenty-four hours after a sudden fright or other mental shock. Since this point will be of some importance in later discussions, I wish to state that the appearance of a bloody discharge outside of the vagina does not permit the conclusion that the hemorrhage has just begun. In examinations with the speculum made at about the time of expected menstruation, I have often seen a drop of blood filling the external os. At times I have not informed the patient of my findings and re-

requested her to note exactly when her next menstruation began. From several observations made in this manner I am able to draw the positive deduction that if a uterine hemorrhage, possibly menstruation starts with a slight flow, from twenty-four to forty-eight hours may elapse before the patient is aware of the fact that she is flowing. This knowledge seems of great importance in construing in certain cases a possible connection between a psychic shock and a uterine hemorrhage. Theilhaber explains the menorrhagia as chiefly due to a sudden increase of the general blood pressure, while, *e. g.*, in cases of mental depression the amenorrhea, in his belief, is due to an abnormally low blood pressure. His explanation is based upon the theory, which at present, however, is recognized as erroneous, that the menstrual flow starts at the height of the menstrual wave characterized by abnormally high blood pressure.

From the numerous references and observations recorded in the preceding pages, in my opinion, the following conclusions may be drawn:

1. Impulses coming from the central nervous system may alter the normal function of the uterus in regard to both menstruation and labor.

2. The resulting effect may appear either in the form of vasomotor anomalies (amenorrhea, menorrhagia and irregular hemorrhages), or in the form of motor disturbances (sudden cessation or sudden beginning of uterine contractions).

3. With the exception of rather vague reference to disturbances in the vasomotor system and the uterine tonus, and the untenable theory of Theilhaber, no explanation is extant of the exact mechanism by which such a nervous influence may cause the symptom of amenorrhea or metrorrhagia.

In the following pages I shall offer an explanation which, in my belief, is in entire harmony with our present knowledge of the physiology and histology of the uterus.

The motor function of the uterus stands under the control of three centers, cerebral, spinal and local. While the existence of the first two has been established some time, it is only recently that positive proof has been furnished by Franz, Roith, Keiffer, Kehrner and especially by the ingenious experiments of Kurdinowski, that the local centers actually seem to be the most important in the regulation of the motor action of the uterus. Kurdinowski studied the entire process of labor on two pregnant uteri of rabbits which had been completely extirpated and

preserved in warm Locke-fluid. In spite of this proven fact of an entirely independent function of the local centers, even Kurdinowski admits that the motor function of the uterus also may be regulated by the two centers situated in the medulla oblongata and in the lumbar portion of the spinal cord (experiments of Goltz). This physiologic fact then explains the possibility of a direct influence exerted upon uterine function by an impulse originating in the central nervous system, *e. g.*, any mental influence. But I wish to lay particular stress on the fact that such a motor influence becomes noticeable also in the form of a reflex phenomenon, if a peripheral impulse is transmitted to the uterus by way of the central nervous system. Firm uterine contractions in experiments on animals can be seen during irritation of the vagus, or of the central stump of the severed sciatic nerve. Uterine contractions apparently occur as the result of mechanical irritation of the nipple area of the breasts. But even on the human being this reflex contraction has been observed. In order to test Fliess' theory of the relation between nose and genital organs Kossmann (quoted by Roith) during a laparotomy irritated mechanically and chemically the middle of the lower turbinate and could distinctly see how the uterus contracted and turned paler. On the other hand, Keiffer observed a relaxation of the uterine wall after irritation of the crural nerve, Schaeffer during mechanical irritation of the internal os. Kossmann in the course of that interesting discussion concerning the possibility of an atony of the nonpregnant uterus, stated that the wall of the nonpregnant uterus may lose its tonus as the result of an irritation of its interior exactly as it occurs in the puerperal uterus in which some pregnancy products are retained.

It thus must be accepted as proven fact that the uterus may contract or relax under the influence of an impulse transmitted to it from the central nervous system.

As the result of the experiments of Kurdinowski, already referred to, no doubt is left concerning the existence of automatic and spontaneous contractions which rhythmically occur in the uterine musculature. They were described long ago (Frommel) but the older experiments could not be accepted as entirely convincing on account of the possibility of errors. The mere contact of the uterus with air in the laparotomized animal seemed sufficient to cause firm uterine contractions, and it was known through the experiments of F. A. Kehrer

that the uterus shows a marked tendency to respond with rhythmic contractions to any single irritation. All possible sources of error seem to be effectively excluded from the technic invented and employed by Kurdinowski. This has been quite recently emphasized by Franz who willingly subscribes to Kurdinowski's claim of such automatic contractions in the uterus of animals, because he himself succeeded in demonstrating them in a healthy human uterus. Franz was able to register these slight rhythmic contractions which occurred both in the longitudinal and in the circular fibers, being, however, less pronounced in the latter.

A uterine contraction of necessity must exert an effect on the circulation of the blood through the uterine musculature. In his splendid monograph on the blood-vessels of the uterus R. Freund describes some interesting histologic pictures which he found especially in the middle muscular layer of the uterine wall. Through the crossing of muscle fibers loops and veritable vices are formed through which vessels run and in which they may be compressed in two directions during a uterine contraction. At times he saw a vessel squeezed into a sharp angle formed by a dividing bundle of muscle fibers just as the clothes line is wedged between the branches of a peg. "These positions suggest the manner in which uterine contractions stop hemorrhages." In general it must be assumed that a contraction will show a more pronounced effect upon the thinner walled vein than upon an artery, and it seems plausible to assume that the slight rhythmic contractions then must help the deflux of the venous blood from the uterus. (Mayerhofer, Theilhaber.)

Up to a comparatively short time ago it was almost generally believed that both vasomotor and tonus changes in the uterus were regulated by the same centers and would respond in an identical manner to one impulse, in other words, that a uterine contraction always is accompanied by a vasoconstriction, a relaxation of the uterine wall by a vasodilatation. Keiffer indeed thinks that the whole uterus could be considered but a muscular expansion of the vessel walls. McDonald is so thoroughly convinced of the truth of this contention that she is willing to pronounce every theory defective "which even only apparently separates, in regard to its action, the uterine muscle from the blood-vessels."

Such a position seems untenable in the light of certain ob-

servations. Fellner, continuing experiments first begun by Basch and Hoffmann, apparently has positively proved that an irritation of the nervi erigentes, those fibers of the sacral plexus which enter the hypogastric plexus, causes a contraction of the longitudinal fibers in the uterine body with simultaneous active dilatation of the vessels in this area. The nervi erigentes, which are motor nerves of the longitudinal fibers of the body of the uterus, undeniably also contain vasodilators. According to Werth (in Mueller's Handbuch) Frankenhaeuser was the first who claimed that in the beginning of a labor contraction the motor stimulation of the uterine muscle is accompanied by a dilation of the vessels due to active vasodilator action. We possibly have to assume that the normal impulse for a labor contraction may reach the uterus by way of the nervi erigentes. But we have above referred to the fact that the motor action also, entirely independent from the central nervous system, may be controlled by local centers alone. It certainly is interesting to note that Kurdinowski in his experiments on the extirpated uterus found that ergot and especially adrenalin, which are known for their vasoconstricting action, showed a most pronounced effect upon the uterus. The fact that impulses for motor action can reach the uterus through different channels possibly accounts for the difference of opinion of different investigators concerning the coordination of tonus changes in the uterine musculature and vessel walls.

The muscular elements of the uterine wall show all the characteristics of unstriped muscles. Under normal conditions they are in a continuous state of slight contraction, that is possess a tonus. This tone is increased and decreased by various influences. Uterine musculature contracts slowly but like all smooth musculature may remain for a long time in a contracted condition (spasm of pylorus, globus hystericus explained as spasm of esophagus, etc.). The tone may be increased or diminished by the action of motor or inhibitory nerve fibers, but the precise relationship between the changes underlying the development of tone and those leading to the formation of an ordinary contraction has not been satisfactorily determined (Howell). Schatz thinks that there also exists in the medulla oblongata a separate center for inhibiting uterine contractions which has periodic intervals of depression. During the state of depression rhythmic uterine contractions occur (*e. g.*, during pregnancy).

Any acceptable explanation of the exact mechanism by which an impulse, originating in the central nervous system—a *mental* cause, or one transmitted from the central nervous system—a *reflex* cause—could result in the sudden appearance or the sudden cessation of a uterine hemorrhage must be limited to the following physiologic and histologic facts.

1. The blood circulation in the uterus in a very marked degree stands under the influence of the vasomotor system, the uterus being an erectile organ.

2. The uterine musculature shows rhythmic spontaneous contractions.

3. Changes in the tonus of both the uterine musculature and vessel walls are subject to the influence of the central nervous system.

4. Uterine contractions at times (as when the impulse reaches the uterus by way of the *nervi erigentes*) is accompanied by active vasodilation.

5. The sudden cessation of a menstrual flow or a temporary amenorrhea developing as the result of an emotion or in the course of certain diseases of the nervous system, often cannot be due to organic lesions in either uterus or ovaries.

6. The sudden appearance of a hemorrhage as the result of a mental shock cannot be explained, like the menstrual flow, as immediately due to certain degenerative processes in the walls of the endometrial vessels.

7. A sclerosis of some of the arterial vessels must be considered a physiologic condition in a multiparous uterus.

The spontaneous rupture of a blood-vessel is most likely to occur when the general blood pressure is above normal. On this principle was based the explanation of the beginning of the menstrual flow (and also the theory of Theilhaber concerning the cause of functional disturbances of the menstrual flow) until convincing proof has been furnished that under normal conditions the increased blood pressure has returned to its normal height even fallen below the same before menstruation has started. It was next thought (Van de Velde) that the premenstrual fall of the blood pressure is due to a general relaxation of the tonus of the entire blood-vessel system, which relaxation in the endometrium causes a rupture of the capillaries. This explanation does not seem plausible. A relaxed blood-vessel does not rupture, at least not as long as it is in a normal histologic condition. Of course, it can be assumed that

during the premenstrual stage pathologic changes of a degenerative nature may occur, but, to my knowledge, they have never been demonstrated. Such an assumption of necessary degenerative changes, for obvious reasons cannot find a place in the explanation of a sudden nervous metrorrhagia. In this form of metrorrhagia the hemorrhage can be explained only by a sudden rupture of endometrial capillaries, this rupture, on the other hand, most probably must be the result of a sudden rise of blood pressure within these capillaries. But in view of the conditions, prevailing at the time of the beginning of the menstrual flow we seem forced to assume that the local blood pressure in the uterus at times may fall and rise independently from the general blood pressure. Such an assumption is entirely in harmony with physiologic facts. A localized increase of blood pressure is known, as in active hyperemia, or local inflammatory processes.

A local increase of the blood pressure in the uterus, in my belief, will result from any tonic contraction of the uterus, which is slight enough not to cause a compression of the arteries, but strong enough to effect a cessation of the rhythmic contractions of the uterus. Such a contraction probably is better termed a temporary increase of the uterine tonus. What will be its effect? The compression of the thinner walled veins will interfere with the deflux of the venous blood. Since the arteries remain unaltered, a congestion results which will be augmented by the absence of the rhythmic contractions which certainly help to propel the venous blood. In this way a passive hyperemia is produced. This hyperemia must show its most pronounced effect in the capillaries of the endometrium for two reasons; 1. The capillary system of the endometrium in development greatly outranks the two other systems, namely, the subperitoneal and the intramuscular (Werth, Freund), as the largest portion of the arterial blood entering the uterus passes through the endometrial capillaries. 2. While the capillaries of the two latter systems on account of their situation between the muscle fibers are directly compressed by the contracting muscle, such a compressing effect is not exerted upon the capillaries lying in the mucosa. As the result of the passive hyperemic condition and the locally increased blood pressure, therefore, the endometrial capillaries must become dilated and finally will rupture.

This explanation of the rupture of endometrial capillaries

seems also applicable to menstruation. The passive hyperemia just described as the result of an increased tonus of the uterine musculature here would be preceded by the active hyperemia of the premenstrual stage which in itself causes a locally increased blood pressure with a passive dilatation of the capillaries.

This theory of the mechanism by which certain uterine hemorrhages are started is in harmony and is actually supported by the observation that uterine hemorrhages are common in the presence of all those anomalies, which (a) cause an increase in the general blood pressure (as heart failures, obstructions in the portal system, sudden emotions, excesses in *venere*, and so on), which (b) produce an active or passive hyperemia of the pelvic organs, especially of the uterus (neoplasms, inflammations, subinvolution of the uterus, the premenstrual stage), or which (c) impair the integrity of the endometrial capillaries (endometritis, newgrowths).

This theory also is in accord with the fact that metrorrhagias are more common from uteri which contain sclerosed vessels. Sclerosed arteries obviously will be less affected by an increased tonus of the uterine wall. A contraction which in the normal uterus would be strong enough to cause the stoppage of a hemorrhage through compression of the arteries, in a multiparous or senile uterus will have only a slight effect on the sclerosed vessels. Such a contraction may, however, prove sufficient to completely interrupt circulation in the veins, and thus by aggravating the existing passive hyperemia lead to a noticeable increase of the flow—an effect which according to the observations of Wittek is obtained by the use of ergot in the treatment of a metrorrhagia from a sclerotic uterus. It seems not entirely improbable to me that the hemostatic effect of narcotics, referred to in preceding pages, then may be due to a resulting relaxation of an abnormally high tonus of the uterine wall.

The possibility that temporary changes in the uterine tonus may lead to changes of the local blood pressure, finally will explain why disturbances of menstrual function actually are more frequent in "nervous" patients and in those who suffer from hysteria or neurasthenia (Theilhaber, Kroenig, Vedeler, Krafft-Ebing, Binswanger, etc.). Among the most pronounced symptoms of these neuroses we encounter motor anomalies of the unstriated musculature and disturbances of the vasomotor system. In neurasthenia the vasomotor disturbances usually are transitory, but in hysteria the motor and vaso-

motor anomalies are characterized by a certain permanency. We only need to remind of the peculiar conditions resulting from a persistent angiospasm (local edema, obscure hemorrhages in skin, from lungs, nose, stomach, etc.). The globus hystericus by many writers is ascribed to a spasm of the esophagus. Vomiting, frequent urination, retention of urine, diarrhea, are symptoms frequently met with in hysterics. If anatomic lesions as their respective cause can be positively excluded, they may be pronounced as true hysteric symptoms, and then undoubtedly are produced by anomalies in the motor function of smooth musculature. But it seems that also the unstripped muscles of the uterine wall in hysteria very often are affected. Two of the many explanations of dysmenorrheic pain assume that in nervous, especially in hysteric patients, the typical contractions of the menstruating uterus are unusually strong and are perceived by the patient as a cramping pain. Theilhaber's theory of the cause of dysmenorrhea assumes that one portion of the musculature, that surrounding the internal os, during menstruation contracts firmer than the rest of the uterine wall. Guillermi saw in a hysteric patient, pregnant four months, a firm contraction of the uterus which persisted for one month and finally was promptly relieved by suggestive therapy.

If this theory of a locally increased blood pressure due to an abnormally high tonus of the uterine wall actually explains the appearance of some uterine hemorrhages (probably also of the menstrual flow) it should be possible by this same theory to explain the sudden cessation of an existing uterine hemorrhage and of certain types of amenorrhea. This explanation can be given in the following manner: If the uterine contraction, presumably produced by an impulse originating in or transmitted from the central nervous system, is strong and firm, it may completely interrupt the circulation in the arteries and suddenly stop an existing flow (sudden suppression of menstruation due to mental shock or a peripheral irritation like a cold bath). If this firm contraction occurs within a few days before menstruation, it may prevent the typical premenstrual congestion and result in nonappearance of the expected menstrual flow. In this category probably belong the cases of a temporary suppression of menstruation in imaginary pregnancy. In these patients, for obvious reasons, this condition of fear and mental perturbation returns every month just before menstruation is due. In a hysteric patient, however, we seem justified, for rea-

sons already mentioned, to assume that a more or less permanent firm contraction may persist for several months and during this period cause amenorrhea. Amenorrhea, whether due to nervous influences or to local and general disease, if continuing for some time may eventually result in an atrophy of the uterus, but Kroenig emphasizes that in hysteric patients this secondary atrophy never is observed. Therefore, a long period of amenorrhea often will alternate with a period of normal menstruation, if the functional disturbance is brought about by an anomalous influence of the central nervous system, a point which is of considerable importance from the standpoint of diagnosis. The dependence of menstruation and all its anomalies from psychic moments quite recently has been demonstrated by Delius, who by means of hypnotic suggestion has succeeded at will to order an earlier or belated appearance of the next menstruation, and according to his claim was able to control the duration and character of the menstrual flow.

Finally I wish to show that this theory of the immediate cause of a uterine hemorrhage also is applicable to an explanation of menorrhagia and the normal gradual disappearance of a uterine hemorrhage. This latter process probably occurs as follows: The abnormal tonus of the uterine wall diminishes. When it has returned to normal the uterus presumably again begins to contract rhythmically. The deflux of the venous blood is not any longer interfered with. The escape of blood from the ruptured capillaries, on the other hand, promptly relieves the congestion and reduces the increased blood pressure in the arteries. The dilated capillaries are able to resume their normal caliber and those that are ruptured gradually are closed up by thrombi.

If this normal process is disturbed the hemorrhage either becomes profuse (menorrhagia) or continues unduly long.

We have referred in the first part of this paper to the investigations of Fellner proving the possibility that a uterine contraction may be accompanied by active vasodilation. Theoretically we then have to assume that a profuse hemorrhage may result if the impulse which leads to the rupture of the endometrial capillaries reaches the uterus by way of the *nervi erigentes*.

The slight contraction of the uterus may persist. The embarrassment in the circulation of the venous blood continues, and the arterial hemorrhage will not cease until checked either

by a sudden firm contraction of the uterus (*e. g.*, due to ergot) or by a gradual restitution of the normal tonus.

The increased tonus of the uterine musculature may not return to normal but actually sink below normal and remain in this state. Such a condition could possibly be explained, as due to fatigue after a period of continued contraction, but it has been shown that an active relaxation of the uterine muscles can be directly produced by certain impulses (Keiffer, Schaeffer. An abnormally low tonus of the uterine wall by releasing the pressure normally exerted upon the blood-vessels in the mesometrium, will lead to a dilatation of these vessels and result in a venous stasis. This venous stasis will aggravate an existing hemorrhage and the accompanying relaxation of the uterine wall prevent the cessation of the hemorrhage in the typical manner.

A menorrhagia or metrorrhagia produced in this way must be rendered worse by the presence of sclerosed vessels and the absence of a normal amount of muscular elements, because these two anomalies will mitigate against the possibility of a stoppage of the hemorrhage by a firm uterine contraction. The sclerosed arteries will demand a contraction of abnormal intensity. Even a contraction obtained by the administration of ergot, as already stated, may only result in an increase of the flow. This unusually firm contraction, however, in a uterus deficient in musculature can occur only under the influence of a very strong impulse which may be wanting for a long time. Such an explanation of an uncontrollable hemorrhage from the uterus is in full harmony with two of the theories extant, viz., the theory of the uterine sclerosis and of the relative insufficiency of the uterine musculature.

It thus has been demonstrated that the theory offered in this paper, in an apparently satisfactory manner, explains the appearance of a uterine hemorrhage (including normal menstrual flow), the sudden cessation of an existing hemorrhage, an amenorrheic condition, menorrhagia and finally certain forms of uncontrollable or intractable metrorrhagia.

This theory explains the characteristic features of a normal menstrual flow on the basis of a normal activity of the uterine musculature and proves that all the known functional disorders of the menstrual flow may be due to anomalies in this motor activity. Motor disturbances, however, can be interpreted only by a faulty innervation, and, therefore, the deduction

seems permissible, that this theory indirectly proves the significance of an anomalous influence of the nervous system in the causation of certain functional disorders of the menstrual flow.

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4619 McPHERSON AVENUE.

PHLEGMONOUS SIGMOIDITIS.

RESECTION—RECOVERY.*

BY

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(With One Illustration.)

ATTENTION has been drawn to circumscribed inflammation of different parts of the colon, resulting usually from irritation of fecal masses in persons affected with constipation. The two parts usually so involved are the splenic and sigmoid flexures. In cases reported by Graser, Rotter, Fleiner, Strauss, Leube, and Rosenheim, the pathological condition varied from acute phlegmonous infiltration of the coats of the bowel with the formation of ulcer of the mucosa and pericolic inflammation, to milder grades where there was simply a hard infiltration of the

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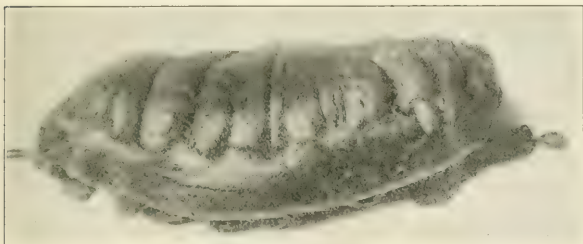
bowel walls with hypertrophy of the muscular coats. This produced a moderate stenosis. In the severer cases there was pus formation, which caused a pericolic abscess, which by perforation into the peritoneal cavity, led to general peritonitis, or opened into a neighboring organ, thereby leaving a fistula. Some cases of this kind, when operated on, presented, macroscopically, all of the appearances of carcinoma. Mayo and Brewer reported cases at the last meeting of the American Surgical Association, in which diverticula were found, and these authors attributed the disease to infection of the diverticula from irritation of small hardened fecal concretions. Wilson made careful examinations of Mayo's cases, and showed these diverticula in all of the specimens. The patients so affected were over forty-five years of age. Many cases where the symptoms pointed to a localized inflammation of the sigmoid, recovered perfectly. Rosenheim states that in the majority of cases the course of the disease is chronic, with, at times, acute exacerbations. There may be attacks of obstruction without previous indications of disease of the sigmoid.

The case I wish to report differs from these already cited in being very acute in its onset and course, and occurring in a young person.

The patient, Miss A. P., age twenty-four, was seen with my friend Dr. J. W. Smith, of Dundas, on the twenty-first of March, 1907. The following history was obtained. She had always enjoyed good health, except during her menstrual periods, when she had some pain. When twenty years of age she consulted a lady physician, who "dilated the womb" to relieve the dysmenorrhea. Following this operation she had pain and tenderness in the abdomen, which confined her to her bed for six or eight weeks. She recovered and remained in good health, though at times she had constipation, but she was not in the habit of taking laxatives.

On March sixteenth, she had a good passage from the bowels and felt perfectly well. On the following day she had a desire to go to stool, but did not have a passage. She had slight crampy pains in the abdomen. There was little change on the eighteenth, and she performed her usual household duties. Next day, the nineteenth, the frequent desire to go to stool was accompanied by severe rectal tenesmus. The pains in the abdomen were quite severe at times, and were confined to the lower segment. There was a general feeling of lassitude, and

she had no appetite. During the night of the nineteenth she did not sleep, owing to the crampy pains and tenesmus. Dr. Smith, who was called at this time, ordered morphia suppositories and hot applications to be applied over the abdomen. Her temperature was 99.5° F. and the pulse 90. When I saw her on the twenty-first, five days after her first symptoms, she did not look very ill. The temperature was 99.5° F. and pulse 90, and of fairly good volume. The sclerotics were slightly yellowish in color, tongue coated with white layer, and lips dry and cracked. The abdomen was soft, not tender on pressure except slightly, over the sigmoid. The liver was not enlarged



Photograph of segment removed, after hardening in formalin.

and the spleen not palpable. The chamber which she had used, contained about four drams of bloody serum which had no disagreeable odor. A digital examination of the rectum caused great discomfort to the patient, and revealed very little of a positive character, as when the other hand was passed over the abdomen the muscles resisted some. There certainly was no tumor to be felt at that time.

She was ordered small quantities of water, to be given every few minutes by the mouth, together with the hot applications to the abdomen, and morphia suppositories. The following day I saw her again, and went prepared to make a careful rectal examination. She resented this, however, as she felt better. Her temperature had never risen above 99.5° F. and her pulse ranged from 90 to 96. The patient did not look very ill. The sclerotics were still tinted, and the abdomen appeared slightly fuller. The liver was not enlarged. The heart sounds were normal, and urine negative. There was slight tenderness over

the left lower quadrant of the abdomen. She had passed no fecal matter since the eighteenth, yet, during this time she had taken practically nothing to eat, but had drunk large quantities of water. Small quantities of bloody serum were passed frequently from the bowel, at times only a few drops coming. On the twenty-third, she looked very ill. The sclerotics were yellowish, lips cracked and bleeding, tongue flabby and coated. The abdomen was moderately distended, and rigidity of the muscles was felt on the left side below. It was impossible to palpate deeply on account of the distress it caused the patient. There was no intestinal peristalsis, though slight rumbling in the bowels could be heard at times. She had had no vomiting. During the morning she had passed small quantities of bloody serum which had a very disagreeable, gangrenous odor.

She was removed to St. Joseph's Hospital, Hamilton, a distance of four miles. On admission her temperature was 98.5° F., and her pulse 90 and extremely poor in volume. Dr. McCrae, of Baltimore, saw her with Dr. Smith and myself, and it was agreed to operate at once. Under ether anesthesia a small median incision was made above the pubes. On passing the fingers into the pelvis a hard sausage shaped mass was felt in the sigmoid. This was drawn out of the abdomen and found to consist of a localized inflamed segment of the sigmoid. It was hard, contracted, of a dusky red color, five inches in length, and involved, apparently, all of the structures of the bowel. The corresponding part of the mesosigmoid was somewhat thickened, but showed no vascular changes.

The colon above the diseased area was moderately distended. There was no peritonitis, except that portion of the peritoneum covering the diseased segment of bowel, and the omentum was not down in contact with it. The mesosigmoid was ligated and the diseased portion of the bowel excised. A Paul tube was placed into each divided end of the remaining bowel. Two figure of eight sutures closed the upper part of the abdominal wound.

The patient was then quickly placed in bed and a continuous saline given by the proximal tube. Although the operation occupied only about fifteen minutes, and a very little ether was given, there was considerable shock. Her pulse after the operation was 140 and weak, the temperature was 98° F. She passed rather a restless night, was given one to six grains of morphia hypodermatically. About three pints of the saline

was absorbed. The bowels acted fairly well. The following morning 20 c. cm. of antistreptococcic serum was given, and repeated in the evening. Small quantities of mucus escaped from the anus several times during the day. She also had quite severe hiccoughs once during the afternoon. The pulse ranged from 140 to 154, was quite weak and of small volume. The temperature ranged from 98° F. to 99 $\frac{3}{4}$ ° F. She vomited a small quantity of brown fluid.

March twenty-fifth. Patient decidedly better. The pulse fell to 100 and had a much better volume. She had hiccough in the afternoon, apparently due to the irrigation. The saline was stopped for a time, and the patient was able to take some fluid by the mouth. The eyes looked much clearer, and the lips began to heal. Her convalescence now became rapid. She spent most of the day on the balcony in the fresh air, and was able to leave the hospital on the eleventh of April. She returned to the hospital on May fifteenth, and the following day the abdomen was reopened, the ends of the bowel freed and an end to end anastomosis made, by means of the Connell suture, celluloid linen being used. The patient made a perfect recovery, and has enjoyed good health since.

The specimen removed was five inches in length, and appeared to be a solid mass of a dusky red color. The peritoneal coat was not clear and glistening like the corresponding parts in the healthy bowel. The divided end showed the two inner coats of the bowel tremendously thickened. The mucous membrane was dark reddish-gray in color, and had a distinctly gangrenous odor. There were no evidences of a diverticulum to be seen from the outside. The lumen of the bowel was completely occluded by the swelling.

A culture taken from the muscular coat showed the streptococcus pyogenes and a long bacillus of the colon type. The bowel appeared as though it were affected with erysipelas. There were no fecal concretions found in the specimen. One shallow pouch was found which involved all of the coats of the bowel, but it hardly deserved the name of a diverticulum. Sections of the diseased area showed on the mucous membrane a layer composed of fibrin, blood, epithelial cells and leukocytes. The cells in the glands were degenerated in certain parts and the glands were infiltrated with leukocytes. In the muscularis and submucosa there were extensive hemorrhages with fibrin and cell infiltration. It was in this submucosa that the

greatest changes were found. In some sections this submucosa seemed to be filled with blood which separated the mucous membrane from the circular muscular tissue of the bowel, and extended, in places, between this muscular layer. The lymphatic spaces were choked by leukocytes. There was some cellular infiltration of the muscular layers, and blood was effused between the muscular fasciculi at different points. There were very few changes found in the longitudinal bands in the serous layer.

215 JAMES STREET, SOUTH.

INTRAPARTUM VAGINAL OVARIOTOMY FOR OVARIAN CYST OBSTRUCTING LABOR.

REPORT OF A CASE.*

BY

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AN ovarian cyst obstructing labor so impacted in the pelvis that it cannot be pushed up into the abdominal cavity, and so large that the child cannot pass by it through the parturient canal, is one of the most formidable complications of pregnancy. To overcome this difficulty we must remove the obstruction either through the vagina (by puncture or vaginal ovariectomy) or through an abdominal incision (by abdominal ovariectomy).

When the mortality of abdominal surgery was high, puncture was considered the only safe mode of treating this complication, and even now we find a great number of teachers that advise this procedure. Among the advocates of this method, we find F. Ahlfeld,¹ Edward A. Ayers,² E. P. Davis,³ J. E. Edgar,⁴ H. J. Garrigues,⁵ H. A. Kelly,⁶ Macnaughton Jones,⁷ R. Olshausen,⁸ Playfair,⁹ Ribemont-Dessaignes and Lepage.¹⁰ As an advocate of this, though modified method, may be named Fritsch¹¹ who makes a vaginal incision, sutures the incision to the cyst wall and then drains it. M. Sanger and O. v. Heff¹² approve of this procedure.

With the gradual improvement in the technic of abdominal surgery we notice a tendency toward the abdominal ovariectomy. Thus, E. C. Dudley,¹³ G. E. Herman,¹⁴ B. C. Hirst,¹⁵ J. Schauta,¹⁶ Bland Sutton,¹⁷ J. C. Webster,¹⁸ B. H. Wells,¹⁹ J. W. Williams²⁰ are advocates of the abdominal ovariectomy and, with the excep-

* Read before Pittsburg College of Physicians, Sept. 27, 1907.

tion of Bland Sutton and G. E. Herman, all advise in addition Cesarean section.

The vaginal ovariectomy for this complication of labor is advocated by such European leaders in obstetrics and gynecology as E. Bumm,²¹ A. Dührssen,²² and A. Martin.²³ In our country this method has almost no followers.

How does this vaginal ovariectomy compare with the other methods?

So far as puncture is concerned its application is somewhat limited. Cysts of viscid or semi-solid contents cannot always be emptied through a puncture. Besides, leaving a punctured sac in the pelvis after labor is dangerous. We have no means of preventing the tumor contents from contaminating the peritoneal cavity; the sac itself is liable during the puerperium to become infected (Zetter²⁴ has reported twenty-seven such cases); torsion of the pedicle may occur on account of rearrangement of the pelvic and abdominal organs; and the pressure exerted on the tumor during labor may cause gangrene of the sac.

Now add to all this the absolute necessity of the future ovariectomy and then compare this method with the vaginal ovariectomy.

With the patient already in position and antiseptically prepared for the puncture, a vaginal incision followed by emptying of the cyst, and removal of the sac before or after delivery, with or without the closure of the incision, puts the patient in a condition free from future possible complications. Such operation is complete, safe and does not consume very much more time than puncture.

The abdominal ovariectomy, of course, has not the disadvantages of puncture, but, when we compare vaginal ovariectomy and forceps delivery with abdominal ovariectomy and Cesarean section (almost all advocates of abdominal ovariectomy insist on accompanying it with Cesarean), when we compare the milder shock and more rapid recovery from the vaginal operation, with the severer shock and longer convalescence of the abdominal operation, when we compare the normal uterus left after the vaginal operation with the scarred uterus left after the abdominal operation, we cannot help but prefer the vaginal route. Of course, ultimate results alone can definitely decide the superiority of one or the other methods, but this complication being a rare one, statistics of great value cannot be obtained. After a rather careful search in literature, we were successful in finding only five such cases. If we add the one of

our own we get six cases, a number too small to be of much statistical value. Still, the results in these cases are so uniformly good (all the mothers and the children having recovered), that we feel justified in citing these cases in favor of vaginal ovariectomy.

It may be interesting to note here that Democh³⁰ collected twenty-one cases (total number of cases reported in German literature) of vaginal ovariectomy during different months of pregnancy with no mortality for mother, while the most favorable statistics of abdominal ovariectomy, that of Grafe,³¹ give a mortality for the mother of 2.3 per cent.

Before taking up the objections to the vaginal ovariectomy, let us go over in short its important steps.

A vaginal incision, either longitudinal or transverse, is made and the hemorrhage arrested. A trocar with a rubber tube attached is then introduced into the exposed cyst to carry off its contents outside the vagina. As soon as the tension of the cyst is sufficiently reduced, the sac is caught with clamps on either side of the trocar and pulled down into the vagina to prevent soiling of the pelvic cavity with the fluid contents that may leak out through the cyst along side the trocar. If the cyst is multilocular and the trocar cannot reach all the compartments, or if the contents of the cyst are too thick to be emptied through it, the trocar is taken out and the sac is incised between the clamps and emptied. The cyst pedicle is then tied off, the cyst removed, the vaginal incision closed and the child delivered. This, of course, is the ideal operation.

But the pedicle may be too short or the child may come down after emptying of the cyst, and interfere with the removal of the sac before delivery. Under such circumstances, if the sac can be brought down to the vulva, it is clamped and left there; if it cannot be brought down, then after closing its incision, it is cleansed and returned to the pelvis. The child and placenta are then delivered, the uterus cleaned and packed; the sac removed and the incision closed. Of course, if drainage is required, the vaginal incision is not closed. Fowler's position and vaginal douches are important features of the after-treatment.

Now, what can be the objections to such an operation during labor? The objections that are raised against this method are the possibility of carrying infection into the peritoneal cavity and the difficulties that may be met with in the operation.

SANES: INTRAPARTUM VAGINAL OVARIOTOMY.

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Surgeon.	Year of Operation.	Age of Patient.	No. of Children.	Kind of Cyst.	Operation.	Results.	Remarks.
J. W. Taylor ²⁵	1893	30	2	Monolocular.	Vaginal incision. Emptying of cyst. Ovariotomy Forceps delivery. Drainage.	Both recovered.	
C. Staude ²⁶	1895	32	Multipara.	Monolocular.	Vaginal incision. Emptying of cyst. Ovariotomy. Forceps delivery. Closure of vagina.	Both recovered.	Head came down after ovariotomy, preventing the closure of vaginal incision before delivery.
A. Hesselbach ²⁷	1900	31	6	Monolocular.	Vaginal incision. Puncture of cyst. Cyst closed with catgut and left in vagina. Forceps delivery. Ovariotomy. Closure of incision.	Both recovered.	Cyst adherent. The whole hand passed into the pelvis through the incision and adhesions freed.
E. Bumm ²⁸	1901	30	6	Multilocular.	Vaginal incision and emptying of cyst. Drawing the sac down to vulva. Forceps delivery. Ovariotomy. Closure of incision.	Both recovered.	The cyst adherent. Trocar was first used, but contents so thick that they could not be emptied through it.
E. Peterson ²⁹	1905	21	1	Monolocular.	Vaginal incision. Emptying of cyst. Ovariotomy. Double deep incision in cervix and perineovaginal incision to facilitate forceps delivery. Closure of incisions.	Both recovered.	Extensive firm adhesions freed, causing some bleeding. Right parametric abscess formed; abscess ruptured into bladder the fourteenth day after delivery.
The writer	1901	30	3	Multilocular.	Vaginal incision. Emptying of cyst. Closure of sac with double ligature. Forceps delivery. Ovariotomy. Closure of vagina.	Both recovered.	Gave birth to a child since.

Infection may be carried into the peritoneal cavity from the vagina, uterus or cyst. The vagina, properly prepared for operation, can be excluded as a source of infection. The uterus cannot. Patients with ovarian cyst obstructing labor frequently come to the surgeon with the uterus already infected by the many manipulations and unsuccessful attempts at delivery. But if the ovariectomy and the closure of the vaginal incision precede the delivery of the child, there ought not be much danger of peritoneal infection from the uterus. If, however, the ovariectomy must follow the delivery, then packing the posterior cul-de-sac with iodoform gauze before delivery, and the uterus after delivery, will make the ovariectomy safe, at least much safer than the abdominal ovariectomy with Cesarean section in which the general peritoneal cavity is exposed to infection from the widely opened septic uterus and its septic contents.

As to the objection on account of possible infection carried from the opened cyst, it, of course, is applicable only to the dermoid and purulent cysts. If the trocar, then, shows the cyst to be purulent or dermoid, more care should be taken during the operation to avoid peritoneal infection from the cyst. As shown above, the evacuation of the cyst is done outside the peritoneal cavity, and no infection should be carried in if ordinary care is taken.

The other objections to the vaginal ovariectomy are the difficulties occasionally met with in such operation. These difficulties may be due to adhesions or to unexpected accidents. Adhesions, of course, may be encountered. Out of the six cases reported, two had such adhesions. But ordinarily, they are not extensive and are easily reached and freed. Very extensive adhesions of a cyst can hardly be expected to be met with during labor. Pregnancy can hardly go to full term with such unfavorable adhesions. But, suppose pregnancy does go to full term and suppose the adhesions are so firm and extensive that it is dangerous or impossible to free them through the vagina, then, if these adhesions bind the cyst to the pelvic floor, incising and draining the sac, delivery of child and, some time later, an abdominal ovariectomy is the proper and safe procedure, the incision into the cyst in such a case being extraperitoneal. If the adhesions are higher up and the vaginal incision opens into the pelvic peritoneal cavity, then we can, by suturing the vaginoperitoneal edges of the incision to the cyst, close the peritoneal

cavity, drain the cyst extraperitoneally, deliver the child and perform some time later an abdominal ovariectomy.

Such a procedure is much safer than Cesarean section and abdominal ovariectomy. The difficult and time-consuming separation of the extensive adhesions can hardly be safely undertaken after Cesarean section, in an already exhausted patient.

Another objection to the vaginal ovariectomy at labor is the greater possibility of accidents during the operation and at times greater difficulty to correct them through the vaginal incision. Accidents are liable to occur in any kind of operation. The better the technic and the greater the care, the less liability there is for accidents to occur. In the six cases referred to no accidents have been reported, but our attention may be called to the accidents reported in two vaginal ovariectomies performed during the ninth month of pregnancy before the onset of labor. While such cases do not properly belong to the class under discussion, still, since accidents of the same kind may occur in vaginal ovariectomies during labor, we think it advisable to refer to them here. One of these was that of Rausch,³² in which the pedicle tore off during the attempt at ligation, second was that of Lee,³³ in which the necrotic septic dermoid cyst ruptured into the peritoneal cavity and had to be delivered in fragments. A laparotomy for ligating the pedicle corrected the first difficulty and proper cleansing and draining the pelvis through the vaginal incision corrected the second. Both mothers and their spontaneously delivered children recovered.

While speaking of accidents that may occur in vaginal ovariectomy, it should not be forgotten that in abdominal ovariectomy with Cesarean section, there is a possibility of accidents occurring, not only in the ovariectomy, but in the Cesarean operation as well.

We see then that the vaginal ovariectomy in cases of cysts obstructing labor compares very favorably with the other methods now in vogue, and should, therefore, be recommended as a method of choice in treating this formidable complication.

REPORT OF THE CASE.

To enable us to properly place our case on record we will recite it in detail.

Mrs. E., aged thirty, IV-para, in labor, was sent to the West Penn Hospital, December 24, 1901, by Dr. W. E. Lawson, of

Homestead, Pa. She gave a good past history and stated that neither before nor during the pregnancy had she noticed any abnormalities in her abdominal cavity. She had been in labor thirty-six hours and the amniotic sac had ruptured twenty-four hours before admission.

On examination a large, tense, somewhat fluctuating tumor was found in the posterior cul-de-sac, displacing the cervix forward and upward. The os was found to be completely dilated, lying back of the pubic bone. The diagnosis of a cyst obstructing labor was made. After an unsuccessful attempt under anesthesia to lift the cyst out of the pelvis, a transverse incision was made through the posterior cul-de-sac, and the tumor was exposed. The incision did not bleed much. A trocar with a rubber tube attached was then inserted into the cyst, and as soon as a sufficient quantity of fluid escaped, to reduce the tension, the cyst wall was caught with forceps on either side of the trocar and pulled out into the vagina. The cyst fluid was found to be gelatinous, and not more than about three ounces could be obtained through the tube. The cyst then having been recognized as a multilocular one, the trocar was removed, the opening was enlarged with scissors and one after another the cyst compartments were opened and drained. The uterus then rapidly assumed its normal position, and the presenting head came down, making the removal of the cyst before the delivery of the child an impossibility. The lower portion of the cyst wall was then transfixed with a long double silk ligature, which was tightly tied and left long enough to serve the purpose of a traction ligature. An additional ligature was applied above it. The sac was carefully mopped off with an antiseptic solution and returned into the pelvis. The end of the traction ligature was tied to iodoform gauze with which the posterior cul-de-sac was then packed. The child was found to be in right occipito-posterior position and was delivered with forceps. The placenta was then expressed and the uterus cleansed and packed with gauze. The pelvic packing was then removed, bringing out the traction ligature and the cyst. With strong clamps the pedicle was brought out of the pelvis, tied off and removed, and the vaginal incision was closed. The uterine packing was then removed.

The mother was put to bed in Fowler's position. There was some rise of temperature after the operation, reaching the highest point (101) on the fourth day. Pulse never went above

ninety after the first day. On the nineteenth day after the operation the mother and the child were discharged from the hospital.

February 10, 1904, a little over two years after the operation, the patient was delivered of another child without any complications.

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PARK BUILDING.

SCOPOLAMINE-MORPHINE ANESTHESIA IN GYNECOLOGY.

BY

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IN order to define the value of scopolamine-morphine anesthesia in gynecological work I have looked over my records of scopolamine-morphine anesthetics since the first time when it was used by me on Oct. 17, 1904. I exclude all operations on organs outside the female sexual tract performed during the same period, unless they were performed at the same time and under the same anesthetic as the gynecological operation. I review, therefore, 185 anesthetics.

I have operated on considerably over 400 cases in the period indicated, but review here only the gynecological cases, and not all of these. Many gynecological cases were operated on with other methods of anesthesia, not because I considered scopolamine-morphine contraindicated, as I recognize no contraindications except extreme youth, but because of external conditions, as lack of time or the patient's or the patient's physician's objection to the scopolamine-morphine on account of some gossip or some alarmist report in the literature.

The operations in which I have employed the scopolamine-morphine may be classified summarily as follows:

Amputation of cervix 7, castration 1, vaginal celiotomies 22, ventral celiotomies 91, curettements 55, dilatation of uterus 3, enucleation of fibroids 10, extirpation of condylomata 1, extirpation of hydrocele muliebri 1, extirpation of labial cyst 2, discision of cervix 4, extirpation of urethral caruncle 1, vaginal

hysterectomy 12, abdominal hysterectomy 24, kolpokleisis 1, kolpoperineorrhaphy 41, anterior kolporrhaphy 34, kolpotomy 13, ovariectomy 23, perineorrhaphy 4, radical operation for carcinoma of uterus 4, resection of ovary 4, salpingectomy 21, salpingoophorectomy 23, salpingostomy 1, shortening round ligaments 2, trachelorrhaphy 1, vaginal radical operation 1, vagino-fixation 4, vesico-fixation 1, ventro-fixation 1, vesico-vaginal fistula 1. In addition to these and combined with them the following surgical operations were performed: amputation of breast 1, appendectomy 13, cholecystectomy 1, extirpation of coccyx 1, extirpation of axillary glands 1, extirpation of hemorrhoids 8, extirpation of goiter 1, extirpation of lipoma 1, extirpation of ileocecum 1, extirpation of varicose veins of leg 1, radical operation for hernia 4.

As reported in my first paper on scopolamine-morphine anesthesia (*Annals of Surgery*, 1905) I have followed Korff in the dosage, and have given scopolamine $\frac{1}{50}$ grain and morphine $\frac{1}{2}$ grain, divided in three doses to be injected under the skin two and a half, one and a half and one-half hours before the time set for the operation. In twenty-six cases only five-sixths or two-thirds of this dose has been used. In six cases hyoscine was used instead of scopolamine, but the effect has been so completely the same as that of scopolamine, and the number is so small that I shall figure the hyoscine cases with the scopolamine-morphine cases.

The drug which I used was at first Merck's hyoscine or scopolamine in crystals and the solutions were never used when older than one week. Later on, I have used Parke Davis' tablets of scopolamine. I have never been able to see any reason why I should use the widely advertised, hyoscine-morphine-cactine-tablets, as the cactine appears to be at best an inert drug (see Hatcher, *Journ. Am. Med. Assn.*, Sept. 21, 1907, page 1021).

The injections are to be given hypodermically, but I find quite frequently, particularly in fat patients, that the needle of the hypodermic has not penetrated the skin so that the injection is given intradermically instead of hypodermically. The patient's skin then presents a wheal as in the intradermic infiltration method. The absorption of the drug is thereby retarded, the patient arrives on the table in a very incomplete condition of drowsiness, and the full effect of the injection does not appear until some time later. It then becomes necessary in the beginning of the operation to add some inhalation anesthetic to the

scopolamine-morphine anesthesia; by and by the patient manifests the full effect of the injections, and if the anesthetizer is not sharply on the lookout the patient may go into more profound narcosis than is necessary or advisable.

Mistakes in the dosage may occur in spite of apparently most minute instructions. Two of my patients, on one morning, received $\frac{7}{150}$ grains of scopolamine and $\frac{1}{8}$ grain of morphine instead of $\frac{1}{30}$ and $\frac{1}{2}$ respectively. Both showed pronounced toxic scopolamine symptoms, had red faces, widely dilated pupils and showed considerable excitement. The operations were in one case vaginal hysterectomy requiring sixty minutes with ten drams of chloroform in addition to the scopolamine-morphine; in the other case plastic operation for prolapse, requiring thirty minutes with one-half ounce of chloroform in addition to the scopolamine-morphine. Both patients made uninterrupted recoveries and the toxic effects wore off in a few hours without further damage.

The general preparation of the patient for the operation must be finished before the first injection is given. The patient should be kept in a dark and quiet room, should be transported to the operating room with as little disturbance as possible, and the operation should be performed without any avoidable noise and in a quiet room.

These directions sound simple enough, but the ways in which they miscarry are almost too numerous to mention, and some mistakes seem so silly that they are almost incredible. In one hospital the patient was expected to go to sleep in a room in which the windows were wide open so that the room was flooded with light and the noise of the street cars passing under the windows could not fail to reach the patient; and finally the interne asked the patient to climb on the cart for transportation to the operating room. In another hospital I found the nurse combing the patient's hair and trying to talk to her between the second and third injections. As the patients can hear more or less distinctly when under scopolamine-morphine alone I do not ask for scalpel or scissors in a loud voice when I need them in the course of the operation, but I indicate by a motion of the hand what I want. One nurse at first did not understand what I wanted, and then blurted out loud, "Oh, it is a knife you want." Of course the announcement that the knife is approaching does not tend to put the patient's mind at greater ease.

The impression seems to be a pretty general one, though it is a

mistaken one, that patients under scopolamine-morphine are as dead to the world, if I may say so, as patients under chloroform or ether. They are not. The majority can be roused so that they move; sometimes they even speak and answer questions rationally.

As a rule it is impossible to perform an operation under scopolamine-morphine alone if it is considered necessary to exhibit oratory together with operative technic, and I am not astonished to learn that the method was unsuccessful in large clinics before a noisy audience.

The patient has to be handled carefully; scopolamine-morphine anesthesia does not encourage slap-dash surgery. It is a perfectly true objection to the method that it requires slower operating than chloroform or ether. It is often necessary in the course of the operation to stop for a minute, and let the patient who has been aroused by some act of the operation go to sleep again.

Vaginal operations, many of which could be performed well enough without any anesthetic, offer a more successful field for the scopolamine-morphine anesthesia than laparotomies. The abdominal muscles rarely are relaxed completely, and where it is necessary to have them completely relaxed, chloroform or ether is required in the majority of cases. When I know beforehand that such relaxation will be desirable in the course of the operation I now give only two-thirds of the dose in order to save chloroform or ether rather than with any intention of performing the operation under scopolamine-morphine alone.

The reason why we employ scopolamine-morphine instead of the local anesthetic, or no anesthetic, lies rather in the psychic field than in that of technic. Technically it may be perfectly feasible to carry through a vaginal plastic or even a vaginal hysterectomy without any general anesthetic, or without any anesthetic at all, but the after-effect on the patient's mind is frequently very disagreeable. It takes some patients days to get over the mental effect of such an interference, whereas it is the rule after scopolamine-morphine that the patients remember nothing that has happened to them after the second injection. Many, in fact, wake up hours after the operation and do not know that they have been operated on. The testimony of patients who have been operated on under chloroform or ether on some previous occasion, and have scopolamine-morphine for a subsequent operation, is decidedly in favor of the scopolamine

morphine. It is a great blessing for many patients to have the disagreeable impressions connected with an operation kept from their minds, particularly so in the case of neurotic women, and scopolamine-morphine practically obliterates the hours before and after the operation from the patient's consciousness.

Patients often move in the course of the operation, or struggle or cry out, but almost never remember that. Others, who have been perfectly quiet during the operation think afterwards that they had been very noisy. Some have told us that they knew everything that was done in the operation, but when we asked them in what direction the incision had been made we never found one who could tell us correctly.

As said in my report in the *Annals of Surgery* the cases in which scopolamine-morphine alone is sufficient for operation are the minority (twenty-four in this series of 185). In these twenty-four cases the operation lasted from a few minutes to over an hour—twenty-one patients had the full dose, two had two-thirds and one five-sixths of the dose, two had vaginal hysterectomies, four had kolpotomies for pelvic abscess, the rest had plastic operations for prolapse or fistula, exploratory incisions, and one a hernia in combination with plastic work for complete prolapse of the uterus.

In addition to these twenty-four we have to consider thirty-one cases which had less than one dram of chloroform or only a few drops of ether in addition to the scopolamine-morphine. Eleven of these were laparotomies (five ovariectomies, two exploratory incisions, three salpingectomies, one shortening round ligaments), five of them had chloroform, six had ether. The other twenty cases (seventeen chloroform, three ether) were vaginal operations (plasties, curettements, kolpotomy). Of the nine cases which were given ether in addition to scopolamine-morphine four had received only two-thirds of the dose of the scopolamine-morphine. The time consumed in these thirty-one cases was from five to fifty-five minutes, with an average of twenty-three minutes.

We have, therefore, a total of fifty-five cases in which no, or very little, inhalation anesthetic was used in addition to the scopolamine-morphine, that is to say, almost one-third of the total number of the cases could be counted as complete or almost complete successes.

On the other hand only three cases out of the total 185 required one ounce of chloroform or over. One was mentioned

above as a case that had received by mistake an overdose of scopolamine and not enough morphine. A second case had received two-thirds of the ordinary dose of scopolamine-morphine and then required two ounces of chloroform during the thirty minutes which were required for a salpingoophorectomy by laparotomy. The third case had received the full dose and required two ounces of chloroform during the eighty minutes necessary for curettement, hemorrhoid operation, laparotomy for salpingoophorectomy and appendectomy.

The advanced age of the patient has formed no contraindication to the use of scopolamine-morphine. I have operated on twenty-five patients between fifty and seventy years of age. Thirteen had laparotomies alone or combined with vaginal operations. Two of the thirteen had only two-thirds of the dose, two had no inhalation anesthetic. The operations on these thirteen patients lasted from forty-five to eighty minutes. One went through radical operation for hernia, anterior kolporrhaphy, vaginal celiotomy and kolpoperineorrhaphy without any chloroform or ether though the operations lasted altogether one hour. Others had one, two, five drams of chloroform or a little ether. Twelve of these old ladies had only vaginal operations, three without any chloroform or ether, though one of them had in the course of seventy minutes a curettement, operation for vesico-vaginal fistula, anterior kolporrhaphy, amputation of cervix and kolpoperineorrhaphy, while another one had vaginal hysterectomy and kolpoperineorrhaphy.

In the course of a laparotomy it has occurred once among the 185 cases that the respirations went down to three per minute, but, as I was prepared to meet with this condition at some time. I did not disturb the patient with a multitude of drugs as some operators have done, who, unacquainted with this possibility, considered it necessary to add strychnia, digitalis and other drugs to those the patient already contained. In the course of half an hour after the operation my patient's respiration returned to normal, and she proceeded to make an uninterrupted recovery. The pulse of the patients never presented any changes in the course of the operation which were not evidently due to the operation itself. It has been claimed that the hemorrhage from the cutaneous incision was greater under scopolamine-morphine anesthesia than otherwise because scopolamine dilates the vessels of the skin, but I have never had the impression of any noticeable difference.

The scopolamine-morphine, when used in combination with ether (fifty-two cases out of my 185) has the great advantage of doing away with the overproduction of mucus in the respiratory passages. The patient's mouth remains dry. This is one of the causes of the almost total absence of lung disturbances after these 185 operations. In the whole series there was not one case of pneumonia, and only one slight case of bronchitis. I do not think, however, that the scopolamine-morphine anesthesia alone is to be thanked therefor; I rather think that my method of after-treatment deserves the credit for this favorable result. I am referring particularly to my advice to the patients to assume the erect position, in or out of bed, at the very earliest moment. A slight disadvantage due to the dryness of the mouth produced by the scopolamine-morphine is the intense feeling of thirst of which some patients complain. Usually, however, it is possible to give the patients liberal quantities of liquids by the mouth as this method of anesthesia largely does away with the post-operative vomiting.

Of the 185 patients 102 did not vomit at all after the operation; eighty-three vomited more or less; in only one case was there much vomiting in the first twenty-four hours. Of the twenty-four cases which were operated on without chloroform or ether, twenty-two did not vomit at all; of the two who vomited, one had a pelvic abscess for which a kolpotomy was performed, and the other had a vaginal hysterectomy for adenomyoma. The proportion of patients who vomited is greater for the combination of chloroform with scopolamine-morphine (60 per cent.) than for the combination of ether and scopolamine-morphine (about 36 per cent.).

The scopolamine-morphine showed no effect in the postoperative course in regard to action of the bowels or the bladder, or the appetite of the patient or the healing of the wound.

No deaths in the 185 cases can be attributed to the scopolamine-morphine. I have had seven deaths among these 185 cases; one death was due to sepsis following criminal abortion where I performed kolpotomy for localized peritonitis. The patient died three days after the kolpotomy. One case died a few hours after one of my radical operations for carcinoma of the uterus; in this case a tear of the iliac vein, at its bifurcation, occurred in dissecting out adherent glands. The patient succumbed to the loss of blood. Four patients died of peritonitis as follows: One on the fourth day, after an operation for gan-

grenous, submucous fibroid, double pyosalpinx and pelvic abscess; one, three days after an abdominal radical operation for carcinoma of the uterus; one, two days after an operation for tuberculosis of both ovaries and tubes, tubercular pelvic peritonitis, ileocecal tuberculosis with resection of the ileocecum; one on the sixth day, after an operation for suppurated ovarian dermoid, double pyosalpinx, and ovarian abscess; the seventh patient died three days after operation for a large parasitic fibroid apparently from pulmonary embolism. All of these patients had good and sufficient causes of death without any chance of my blaming them on the scopalamine-morphine.

From my experience in gynecological work, I therefore draw the conclusion that scopalamine-morphine anesthesia, with the restrictions mentioned, is of great advantage to the patients, as well as to the operator, and that its judicious use can be safely recommended.

100 STATE STREET.

VESICO-UTERINE FISTULA.*

BY

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New York.

(With Four Illustrations.)

THE success of modern surgical methods will produce no more grateful patient than one who has been cured of a vesical fistula. At the present time when we are best able to cope with the condition, we note the cases becoming rarer and rarer, for as an adequate knowledge of the forces engaged in labor has become more common—and with it an appreciation of the indications for the use of forceps—and since conditions which make the delivery of a living child impossible are recognized early and the cranioclast and basiotribe have given way to the scalpel, we find what was formerly a common misfortune is now a rare accident.

The following case is of interest because of the rarity of a vesico-uterine fistula of this size (two inches in length), the case with which the operation was performed, and the good result following such a simple procedure.

The patient, a primipara, twenty-four years of age, in good general health, previous history negative; had a normal preg-

* Read before the New York Academy of Medicine, November 26, 1907.

nancy with no unusual bladder symptoms. Pelvic measurements revealed a simple flat pelvis with an external conjugate of 18 cm. and a true conjugate of 9.50 to 10 cm. Labor had been in progress for three days with very good pains. At the end of this time the patient became rather exhausted and pains diminished. The head at this time had descended to a level

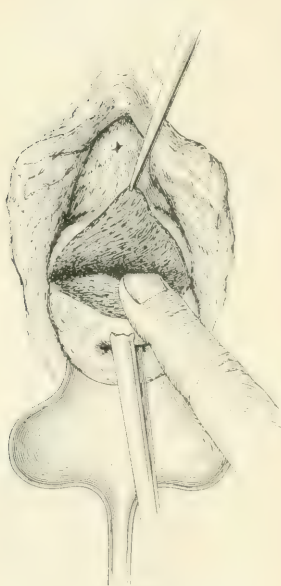


FIG. 1.



FIG. 2.

FIG. 1.—Separation of bladder from uterus by finger after transverse incision.

FIG. 2.—Showing laceration in both bladder and uterus.

corresponding to the spines of the ischium, but made no further advance. The child was in L. O. A. position, the cervix obliterated, and the membranes ruptured. Forceps were applied and after strong intermittent traction for one and a half to two hours, the child was born in deep asphyxia and with a considerable abrasion of left cheek; perineum intact. Weight of child seven and a half pounds. After considerable treatment the child recovered from the asphyxia, with no later complications.

A few hours after delivery it was noticed that urine was passed continuously through the vagina. Upon digital examination the finger could be passed through an opening in the anterior uterine wall into the bladder, through which fistula the urine flowed continuously.

The patient first came under my observation twenty-four

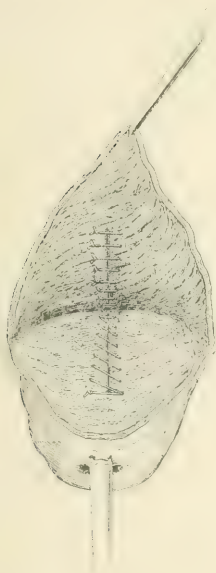


FIG. 3.

FIG. 3.—Suture of bladder; suture of uterine wall.

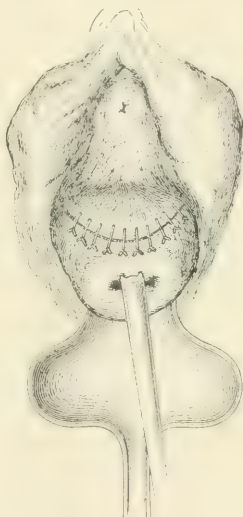


FIG. 4.

FIG. 4.—Suture of vagina to cervix (original transverse incision).

hours after delivery, and upon examination three fingers could easily be passed from the uterus into the bladder. The site of the tear was at the internal os, extending toward the fundus for a distance of over two inches; the laceration of the bladder corresponded in size and position to that of the uterus.

Considering the large size of the fistula it was determined to operate immediately and sew up both the bladder and uterine lacerations. A transverse incision was made on the anterior

surface of the cervix, the bladder pushed up and separated from the uterus, when there were exposed the tears of the size previously mentioned. The lacerations in both the uterus and bladder were clean-cut, showing no tendency to slough, were longitudinal in direction, and by the proper use of retractors were easily brought within the operative field. Considering the short time after the injury it was not deemed necessary to freshen up the edges. Interrupted sutures of No. 2 ten-day chromic catgut united the torn edges of the bladder wound, avoiding the mucous membrane of the viscus. The uterine wound and the original incision in front of the cervix were closed by continuous suture, leaving a small gauze strip drain to bladder wound.

Continuous drainage of the bladder was obtained by retaining catheter for three days, after which time the catheter was used every three hours, for three to four days; later voluntary micturition was allowed.

The gauze strip drain to bladder laceration was removed after forty-eight hours.

The wounds healed without complication, except that on the eighth day there was a slight leakage for one day which required no treatment.

The patient's bladder function has remained normal since operation.

As to the *cause* of this vesico-uterine fistula we are in doubt: the rapid onset of the symptoms within a few hours after delivery and the length and clean-cut character of the wound suggest the forceps as the causative factor; and this would be our opinion, were we to neglect the fact that the forceps were applied by a physician who is especially expert in the use of the instrument. We must recognize the possibility that pressure of the head against the symphysis could cause a simple splitting of the uterine and vesical wall, yet we must not forget the general tendency to quickly ascribe to the forceps injuries produced by pressure too long continued and in reality due to the want of forceps at the proper time.

The literature on vesico-uterine fistulæ is rather scant; Neugebauer, in 1889, published a very thorough résumé of the cases on record at that date—165 in number. In 1901 Sarrazet published an account of thirty-six additional cases; various authors have reported a few cases.

Etiology.—We shall consider only those cases occurring

during labor, disregarding the lesions resulting from surgical operations, carcinoma, pelvic abscesses, broad-ligament inflammation, cystitis, stone in the bladder, and so on. More than two-thirds of the reported cases have occurred in multiparæ. A contracted pelvis is seen in most of the patients. Prolonged labor, early rupture of the membranes and dry labor markedly predispose to fistula. The unskillful use of forceps or of the various craniotomy instruments is sometimes the cause of these injuries, although not nearly as frequently as is generally supposed. Simply because the forceps operation or craniotomy is necessary in the majority of cases, it is easy to use the fallacy of "post hoc ergo propter hoc" and to blame the instrument when in reality the *timely* use of the same would have prevented the complication.

Version with retention of the after-coming head has been the cause in some instances.

Pathology.—Most vesico-uterine fistulæ are small in size, ranging from the diameter of a catheter to that of a finger, and fistulæ of the size here reported, two inches in length, are very rare.

The lower half of the cervix (about half an inch above the external os) is the favorite site of these fistulæ, either anteriorly or laterally, though there are occasional cases reported where there has been a fistula in the posterior lip of the cervix in combination with the general variety. In only one case of the 165 reported by Neugebauer was the fistula above the internal os. In unusual cases the anterior wall of the bladder as well as the posterior may slough away. The peritoneum is sometimes involved in the fistula, giving rise to the possibility of a peritonitis, if infection be present.

Frequency.—Vesico-uterine fistulæ are uncommon; Emmet has reported only four cases, and the text-books barely mention the condition. However, the accident is probably of greater frequency than reported, because of the ease with which the urinary discharge [per vaginam] could be overlooked by a careless attendant, or ascribed to paralysis of the sphincter vesicæ; and as there is a great tendency for these fistulæ, especially the smaller ones, to heal spontaneously, the condition might never be recognized.

Since a better knowledge of obstetric conditions has prevailed generally and major operative work has largely taken the place of craniotomy, and since the indications for forceps interference

have become commonly understood, vesico-uterine fistulæ have become less frequent. The same may be said of other varieties of pelvic fistulæ.

Diagnosis.—This is generally simple enough; subjectively the patient complains of passing urine per vaginam and not in the natural way, though in some cases the urine may pass both ways. The urinary discharge may be continuous (in most cases this is so) or intermittent and depending upon posture. The onset of the flow of urine may be immediately after labor or, as in most cases, a few days postpartum, although cases are on record where the urinary symptoms did not appear until one month after delivery. If the condition persist for any length of time, we have symptoms due to irritation of vagina and vulva from the presence of urine, often with incrustation.

Objectively, the introduction of the finger within the cervix reveals the opening through uterus and bladder, although, if the fistula be small, it may not be discovered. The passage of a sound in bladder and in uterus will often make the diagnosis, and the injection of colored fluids into the bladder will cause the same to be passed through the fistula. The use of the cystoscope will aid materially in difficult cases.

The time at our command will not permit us to consider the differential diagnosis between the various forms of pelvic fistulæ.

Prognosis.—The majority of small vesico-uterine fistulæ will heal spontaneously because of the involution of the uterus causing contraction of the fistula. The larger fistulæ require some operative interference.

Treatment.—Small fistulæ should be treated by simple cleanliness, that is, by vaginal douches and continual drainage of the bladder by a retained catheter. After complete involution of the uterus has taken place some local treatment is necessary if the fistula persist. Caustics, such as the nitrate of silver stick, applied to a fistula will often cause healing by granulation; if the fistula lies high up within the cervix, the application of caustics is impracticable and recourse must be had to suture. In most cases it would seem better to have the fistula cured at one sitting by suture rather than submit the patient to repeated treatment with caustics.

Large fistulæ always require operative interference. The oldest method consisted of a metrokleisis, uniting the lips of the cervix together after denudation and thus making the menstrual blood flow through the bladder and urethra, using the

uterus as a subsidiary bladder. This procedure nearly always gives rise to severe cystitis, various inflammatory conditions in the uterus and appendages, and to-day it is not practised.

The next method consisted in dilatation of the cervix, denudation of the edges of fistula and suture.

In 1886 Follet devised the operation used in this case, namely, incision transverse in front of cervix, separation of bladder and uterus by means of gauze sponge or finger, denudation of the edges of the wounds in both bladder and uterus, separate suture of the bladder and uterus, and closure of the original incision in vaginal fornix.

No. 2 ten-day chromic catgut is probably the best suture material. If there is any oozing from separation between bladder and uterus, it is well to use a small gauze drain in this space for two days.

The after-treatment consists of a retained catheter for two or three days, followed by frequent catheterization for next few days.

Simon maintains that it is unnecessary to resort to any catheter after operation, and he allows his patients to walk around and to void very soon after operation.

For fistulæ situated low down in the cervix Emmet divided the anterior lip of the cervix up to and including the fistula, sutured the bladder edges after denudation, and then repaired the cervix.

In the numerous cases reported by Neugebauer, it is surprising how many cases were healed considering the technic then in vogue. In the present state of surgical procedure it should be possible to obtain a perfect result in nearly all cases operated upon according to Follet's method, and it may be added that the best results are obtained by operating before the inflammatory complications have involved the adjoining tissues. Therefore it seems wise in those cases of vesico-uterine fistulæ in which the opening admits one finger or more, to repair the defect immediately, and in smaller fistulæ to begin local application or operative treatment as soon as the involution of the uterus is complete.

OBLITERATING THROMBOSIS OF THE OVARIAN ARTERY.*

BY

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(With Two Illustrations.)

It is with some diffidence that I present to you this evening the report of a case of thrombosis of the ovarian artery. This timidity is not owing to lack of positiveness of the proposition but, is because of a failure to find a similar case recorded. Had I been less cautious in dealing with this matter and had I been less eager in hunting up the literature bearing upon the subject, I might have been bolder. It was a matter of great surprise to me that not a single case of thrombosis of the ovarian artery is catalogued in the *Index Medicus*. Under these circumstances you will readily understand my feeling of diffidence in reporting the case. Were I less sure of my observation, had I not felt and seen the thrombosed vessel, I might have entertained the possibility of error.

While removing a pyosalpinx dextra of puerperal origin, I encountered considerable difficulty in separating the diseased adnexum from its inflammatory bed. The usual adhesions of the tubo-ovarian structures to that of the broad ligament existed, but instead of the tube being curled on itself with the fimbriated extremity adherent to the ovary and adjacent structures, the abdominal end of the tube was freely adherent to the peritoneum covering the psoas magnus muscle. The enucleation of the inflammatory mass was an unusually difficult one and during the act, the peritoneum tore away from the underlying muscle. The result of this manipulation was that I had in my hand the liberated tube with a band of tissue attached to it. On traction this band seemed to pull on structures deep in the cavity of the abdomen. Even a hasty examination convinced me that this band could not be the ureter, because of its superficial position. A more careful examination showed it to be the ovarian artery with its accompanying vein and adherent perit-

* Read before the Woman's Hospital Society, October 23, 1907.

oneum. The pulsation in the vessel was absent for a considerable distance. The artery felt like a cord, and, beginning at the edge of the ragged ovarian structure for the distance of about two and one-half inches, the artery was cut twice with no bleeding from its cut end. The artery was tied high up and buried beneath the peritoneum, meanwhile covering the denuded psoas muscle.

While no case of thrombosis of the ovarian artery is indexed in the Index Medicus, an interesting autopsy is reported by Allen, of Melbourne, Australia (*Aust. M. J.*, 1884, N. S. VI, page 503). The case was one of thrombosis of the uterine and ovarian veins; the clot formed before death. He does not state the condition of the arteries in this most interesting autopsy. The author says: "The uterine and ovarian veins from the cervix to the fundus are plugged with clot, forming a large mass of dilated tortuous solid cords in the neighborhood of the ovaries and inner ends of the Fallopian tubes. The dilated plugged condition of the ovarian veins extended outwards through the broad ligaments over the brim of the pelvis and upwards almost as far as the kidneys." The patient was delivered of twins three months before her death.

I do not believe that thrombosis of the ovarian artery can be so rare a pathologic condition, considering the commonly encountered thrombosis of arteries in inflammatory states in other parts of the body. In appendicitis, for example, occlusion of the artery of the appendix has been observed. Gerster reports several interesting cases of thrombosis of the main appendical vessels. (The Vermiform Appendix, Kelly, page 330.) In one case he says: "The mesenterium was noticed to be excessively brittle, permitting the ligature to cut through immediately and as blood flowed neither from the veins nor artery, it was concluded that these vessels must be occluded." On page 332 Kelly says: "Thrombosis of the peripheral veins and less frequently the arteries may occur as a complication of an attack of appendicitis, but much more frequently develops as a post-operative sequel."

Deaver (A Treatise on Appendicitis, 2nd ed., page 269) says: "A diseased appendix may give rise even to necrosis of the iliac blood-vessels." Nor is there a lack of cases reported of thrombosis of arteries in various parts of the body, following infection of neighboring tissues. If we consider the anatomy of the ovarian artery, we shall find, I believe, a possible explanation,

why a thrombosis of this vessel might readily escape detection at the time of operation.

The ovarian arteries are two slender vessels of considerable length, arising from the abdominal aorta, a little below the renal arteries. From this point each artery passes outwards and downwards behind the peritoneum, crossing the ureters and resting on the psoas muscle, the right one in front of the vena cava. On arriving at the margin of the pelvis, each vessel passes inward between the layers of the broad ligaments of the uterus to be distributed to the ovary and partly to the Fallopian tube and uterus.

In tubo-ovarian infection should the artery suffer a thrombotic occlusion and the case come to be laparotomized, it would be by a mere chance that such a pathologic condition of the artery would be detected. The technic of the removal of the diseased uterine appendages is such as to preclude the ready detection of a thrombosis of the ovarian artery. In removing these diseased tissues from their adherent bed, the operator liberates the organs, clamps the much thickened broad ligament, removes the pathologic mass and ties either *en masse* or in sections. With either method a thrombosed ovarian artery will hardly be discovered unless one is in search for it. Under ordinary conditions, one seldom picks out these vessels separately to be tied, but secures the hemostasis by first clamping and then tying the vessels.

It is not entering into the province of speculation, to say that a thrombosis of the ovarian artery can occur. By knowing that it occurs in arteries of other regions of the body we must admit by analogy that an obliterating thrombosis of the ovarian artery is a possibility. The literature is quite rich with reports of thrombosis of arteries. Thrombosis of the extremities of the mesenteric arteries is quite frequent. In French literature I have been able to find reports of thrombosis of the uterine, vaginal, and vulvo-vaginal arteries.

Given a focus of infection, the tissues immediately adjacent share in the pathologic process and this is true of all tissues, whether of connective tissue, serous, mucous or blood-vessel type. It is apt to be angeitic as well as cellulitic. Thrombo-phlebitis is a distinctly recognized pathologic entity, and the same is true of infection of arteries, though to a lesser degree. The frequency of phlebitis as compared with pathologic processes in the arteries may be accounted for by the fact that the circulation in

the veins is slower and also that the veins draw their stream from the infected area, while this is not true of the arteries. Irregularities of the rate of flow of blood as well as pathologic alteration in the vessel walls are causative factors in thrombosis. The chief etiological factor, however, is invasion of the walls of the vessels by microorganisms. An endarteritis or an endophlebitis brings about finally the thrombotic state of the vessels, the seat of pathologic changes. The walls of blood-vessels may become involved in the inflammatory reaction by a process of extension, by a deposit of infective organisms by the vasa-vasorum or lymphatic vessels. The bacteria may also enter the walls of the vessels directly from the blood stream. Attention has also been called to the fact by Welch, that a toxic endangitis may cause the thrombosis. In view of all these possible causes of thrombosis, any one alone or in combination may excite a thrombosis in the ovarian artery.

Given a case of adnexal disease in the female generative organs, the thrombosis of the ovarian artery may occur by an extension of the inflammatory process from the ovary and broad ligament to the coat of the artery. Nor is it improbable that an endarteritis may be excited by bacteria conveyed there by the vasa-vasorum. During its course to the organ, the ovarian artery lodges in the folds of the broad ligament, a structure frequently involved in the inflammatory reaction of the uterine adnexa. It is not unusual to find this structure so thickened and infiltrated with exudate as to be scarcely recognizable. Given such a condition as this, it would not be surprising to find the arterial coats sharing in the inflammatory reaction and exudative infiltration. Again in tubo-uterine infection, the ovary rarely escapes and in the severer grades of disease the ovary is vigorously invaded by microorganisms. The smaller branches of the ovarian artery, the arterioles that invade the substance of the organ, must suffer severely and an extension of the pathologic process to the trunk of the vessel is readily conceived. One might say that in severe ovarian infection, an endangitis should be the rule rather than the exception. The affected arterial walls and endothelial changes invite the process of blood coagulation and a thrombosis results. At first fibrin of the blood is deposited as a result of endothelial changes, white and red blood cells become entangled and the coagulum may lie against the wall of the vessel. The lumen of the vessel not being filled, this is the so-called "parietal thrombi." If the clot fills the lumen of the

vessel it is called an "obliterating thrombus." We may have a red, white or a mixed thrombus in a vessel, depending upon the quantity of red or white cells that become intermingled with the fibrin. In this case the coagulum in the vessel was red, fairly well organized, and a gentle squeeze dislodged the plug from the vessel. The cut end of the artery was easily distinguished from that of the vein which was lying beside the artery. The cut end of the artery did not bleed after the coagulum plug was dislodged, showing that the obliteration was somewhat beyond the cut end of the vessel. Nor was there any bleeding from the distal end of the artery.

The history of the case is as follows:

Mrs. B., age twenty-three, primipara, was confined on February 28, 1907. After a very tedious labor instrumental delivery of twins was effected. The patient remained well for over a week, except for some rise of temperature which did not go above 101° F. At the end of ten days the patient had several severe chills and very high temperatures. She remained in bed several weeks, lost her milk and suffered with bloating and constipation. I saw the patient at my office on April 24, 1907. She was very weak, anemic and debilitated, had an anxious facial expression, a feeble pulse of 140, and a temperature of 101° F. She walked with a stoop characteristic of pelvic disease. She was greatly exhausted. Examination showed heart and lungs normal. Abdomen tympanitic, bowels distended, borborygmi marked, paristalsis plainly seen through the much thinned and relaxed abdominal parietes. Patient complains of much pain in the lower part of abdomen, constipation, headaches, anorexia, vomiting, sleeplessness, backache, pain on urination and defecation. Considerable vaginal discharge. Bimanual examination disclosed the uterus high up in the pelvis and drawn towards the right side of median line. The inflammatory mass reached half way up the umbilicus. Fundus of uterus could not be outlined. Palpation caused considerable pain, cul-de-sac felt full; vagina board like and unyielding; cervix lacerated and eroded; slight laceration of perineum. Depth of uterus five and one-half inches; direction of uterine canal forward and to the right. Diagnosis: Pelvic peritonitis, pyosalpinx on right side, lacerated cervix and perineum. Patient was sent to hospital and placed on an expectant supportive treatment. Cold applications to abdomen, anodynes to relieve pain, bowels cleared out, liberal diet; urine examination neg

ative; moderate leukocytosis. For the week following her entrance into the hospital, the temperature ranged from 99.5° F. in the morning to 101° F. in the evening. The general condition of the patient improved considerably, but the local condition remained unchanged. The nausea and vomiting diminished, but the attacks of abdominal pain were quite frequent. Tympanites and violent paristalsis persisted. Bowels were moved with difficulty. On May fifteenth patient was laparotomized and on opening the abdomen in the median line, I came down upon the transverse colon, firmly adherent to the

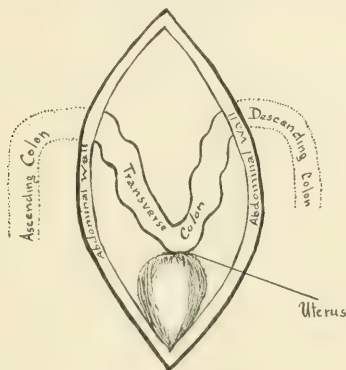


FIG. 1.—Transverse colon adherent to fundus of uterus.

fundus of the uterus, forming a well-marked case of "M"-shaped angulation of the large bowel. The omentum was firmly adherent in the right iliac region, covering the focus of infection of the right adnexum and thus no doubt shutting off the infection from the general peritoneal cavity. The angulation of the colon and its adhesion to the fundus of the uterus is of interest to note. The colonic adhesion very likely occurred before subinvolution of the uterus took place and while the organ was still high up in the abdomen. As the subinvolution of the uterus advanced, the organ became smaller, and as it descended into the pelvis, it dragged the colon downwards, causing the angulation. Immediately behind the colon was the stomach. This gastropnoxis was caused by the adherent omentum dragging the stomach downwards.

After liberating the colon and omentum from their abnormal position, pus welled up, revealing a pyosalpinx. Carefully protecting the peritoneal cavity from contamination, the inflammatory mass was liberated with the result of finding a thrombosis of the ovarian artery, as detailed in the beginning of this paper. The Fallopian tube with the infected ovary was removed, the broad ligament whipped over, all bleeding points controlled, blood clots removed and the abdomen closed in layers

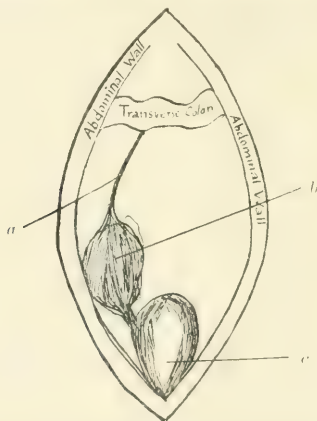


FIG. 2.—*a*. Band of tissue consisting of thrombosed ovarian artery, ovarian vein and adherent peritoneal ribbon. *b*. Inflammatory mass of tube and ovary. *c*. Uterus.

without drainage. The patient stood the operation well, reaction prompt, moderate shock. For ten days following operation there was considerable fluctuation of temperature, the highest being 102° F. There was considerable tympanites present, although bowel movement could be obtained by enemata or cathartics. Convalescence finally set in and the patient left the hospital four weeks after operation. Examination at the time showed the uterus normal, in good condition and movable.

It is a matter of great regret to me that the specimen of a small piece of artery was lost.

The pathologist's report is as follows:

Fallopian tube 7 cm. long, enclosed in many dense adhesions covered by a mass of fibrin; on inspection tube shows

round cell infiltration of mucosa, and thickening of folds of mucous membrane. Submucosa also thickened. There is a growth of connective tissue in muscular coat and considerable thickening. Ovary 5 x 4 x 3 cm. covered by adhesions; seems much thickened. Ovarian tissue has largely disappeared, being replaced by one large cyst and several small ones. Section of ovary shows infiltration with new cells, thickened vessels and few small undeveloped ova. No microscopic change in the wall of the ovarian artery.

150 WEST 120TH STREET.

NORMALLY THERE SHOULD BE NO HEMORRHAGE FROM THE PLACENTAL SITE AT THE TIME OF DELIVERY.

BY

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(With Three Illustrations.)

At the present day we rarely expect to find the perfectly normal in any condition of life, but this does not prevent us from forming our opinions as to what should be the normal state. The usages of civilization have caused many departures, so many, in fact, that we are content to consider the abnormal as normal or sufficiently normal for us and for our manner of life. It is only by studying conditions of life among primitive people or better still by making observations from lower animals, that we can come to any accurate conclusions concerning the normal. The savage woman, who, alone in the bush, brings forth her young, does not suffer from any loss of blood, any more than does the wild animal; but it is not so with her civilized sister; for in the case of the latter, there are lacerations of perineum, vaginal mucous membrane, and cervix, which produce a lesser or greater loss of blood; but added to these minor hemorrhages, there is present a greater or lesser amount of hemorrhage from the placental site, when separation of the placenta occurs, and it is to this source of hemorrhage in the civilized woman that I wish to draw attention. Occasionally it is our good fortune as obstetricians to encounter a case in which there is no hemorrhage whatever from any of these sources; then we have a patient, who constitutionally resembles the primitive type, differing only intellectually from the savage woman; and it is a study of

such cases and a study of the lower animals, that has caused me to come to the conclusion, that normally there should be "No Hemorrhage in the Separation of the Placenta at the Time of Delivery."

The formation of the placenta and the mode of connection of its fetal portion with the maternal must be fully considered in order to arrive at this conclusion.

I. The fetal portion of the placenta is developed from the villi, (Fig. 1.) which remain and continue to develop on that portion of the chorion, which comes directly in contact with that portion

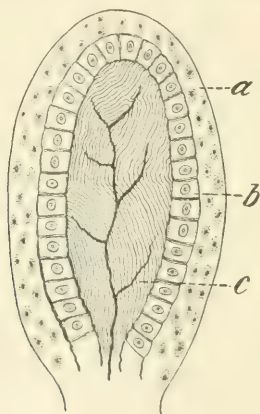


FIG. 1.

of the uterine decidua, destined for the development of the maternal portion of the placenta—decidua serotina.

(a) These villi are covered on their outer surface by a layer of syncytium—epithelial tissue consisting of nucleated protoplasm without cell walls or intercellular substance, resembling the fundamental biological cell, being of a decidedly primitive type of tissue and capable, like all primitive forms, of great reproduction. Primitive forms not having to perform any highly specialized functions, which tend to inhibit their reproductive powers, develop and multiply rapidly.

(b) Under this syncytial tissue is a layer of more highly developed tissue, Langhans' cells, which possess cell walls and

are separated one from the other by a small amount of intercellular substance.

(c) The interior of the villus consists of a small amount of a homogenous gelatinous tissue which supports the capillaries.

II. The maternal portion of the placenta is developed from the blood-engorged and cell-infiltrated uterine mucous membrane—the decidua serotina—which is composed of two parts. (Fig. 2.)

(a) Mucous glands and surrounding tissue and capillaries.

(b) Interglandular spaces.

The epithelium lining the interglandular spaces at the time of pregnancy becomes thicker and the capillaries lying underneath it and around the glands become enlarged. In the nonimpreg-

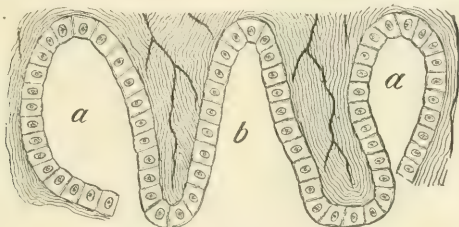


FIG. 2.

nated state the walls of the interglandular spaces fall close together; but in the pregnant state they are separated.

It is generally conceded, that where the fetal portion of the placenta—the villi of the chorion—comes in contact with the maternal portion—decidua serotina—the villi of the former sink into the interglandular spaces of the other, and, the intervillous spaces of the chorion correspond with the mouths of the uterine glands; and not as was once supposed, that the villi sink into the glands of the uterus; the lumen of the latter is not sufficiently large to admit the entrance of the villi. This is accomplished in the same manner as if the fingers—villi—of one hand are inserted into the interdigital spaces—interglandular spaces—of the other hand.

The villi are not so conventionally formed as in the diagrams, but have several branching processes which sink into the walls of the interglandular spaces and produce, there, corresponding indentations.

Now, if as I consider, the villi sink into the interglandular spaces; then the capillaries of the former do not come into direct contact with the capillaries of the uterine portion around the glands; and, therefore, the fetal and maternal blood do not so mingle, but an interchange merely takes place between the two currents, in much the same way—by an osmosis—as in the lungs, where the blood does not directly come in contact with the air

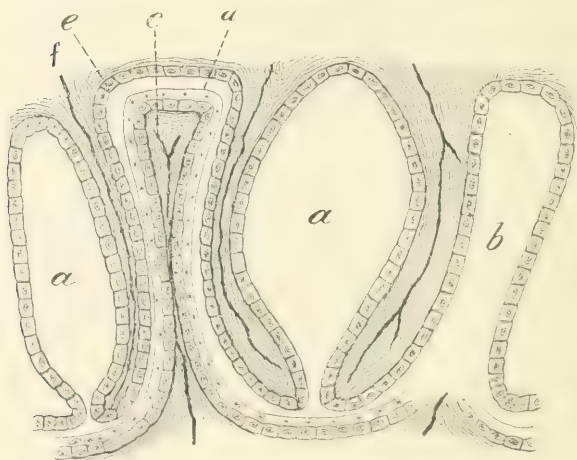


FIG. 3.

in the air vesicles, but an interchange occurs through the vesicle wall and wall of the pulmonary capillaries—Langhan's cells gradually degenerate; so the tissue of the villi is rendered thinner.

The tissues intervening between the blood of the fetal and maternal capillaries, from the former to the latter, named in order would be: (Fig. 3.)

- I. (c) Wall of fetal capillary in villus.
- (d) Syncytium and any remaining Langhan's cells.
- II. (e) Epithelium lining interglandular space.
- (f) Wall of uterine capillary.
- III. Added to each of these, there may be some supporting tissue.

The cells lining the uterine glands secrete a mucus, which together with a secretion formed from a breaking down of the cells lining the interglandular spaces, is discharged between the maternal and fetal portions of the placenta and may serve as a source of nutriment to fetus; but more probably serves as a slight cementing medium between these two portions. At the time of delivery this is readily absorbed if in its normal condition; but if from any pathological cause its nature has been altered it may cause adhesions, which may prevent the normal separation of the fetal from the maternal portion of the placenta.

At the time of delivery the fetal portion—the villi—should slip out from the interglandular spaces of the maternal portion and no hemorrhage should result; for no vessels have been lacerated; but if on the other hand adhesions have occurred during pregnancy between the villi and walls of interglandular spaces, during the expulsion of the placenta—what we are accustomed to call a normal separation—one of two conditions will occur, either a portion of the villi will be left behind adherent to the interglandular space wall and the capillaries of the villi, which have become considerably enlarged as pregnancy has advanced, will be torn and hemorrhage will result from them—an insignificant result; or the interglandular space wall together with the walls of the capillaries of the uterus now likewise considerably enlarged will be torn and hemorrhage will result from the cause, serious in itself, and this no doubt occurs in many cases, other than those definitely described as adherent placenta.

Portions of villi remaining will hinder involution and make hemorrhage from lacerated walls of interglandular spaces more probable than if the uterine muscular tissue had no obstacles to its contraction.

Normally the villi are not all conventionally unbranched processes, but rather most of the villi have branching processes, which, when inserted into the interglandular spaces penetrate into their walls and it is these, which are often nipped off in the expulsion of the placenta, and remain behind to interfere with involution and perhaps later on to work worse havoc. These masses of syncytium may remain inactive for years and then, taking on a malignant nature, may be the source of malignant disease of the uterus and other organs from metastasis; or may during pregnancy cause syncytioma malignum.

Having discussed the abnormalities which may arise, it is next necessary to suggest preventatives for them; but this is beyond

the scope of this paper. Nothing but a complete reversion of life from the abnormal to the normal can accomplish this and this were a too Herculean task to attempt. All causes which tend to produce abnormal circulatory conditions in the uterus or placenta, and they are legion, will cause adhesions, and therefore lacerations of placenta at delivery.

A CONSIDERATION OF NEURASTHENIA IN ITS RELATION TO PELVIC SYMPTOMS IN WOMEN.*

BY

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WHEN we consider the many disturbances woman is subject to, it is not remarkable that neuroses are so common in the women of to-day. The requirements of higher civilization have a marked influence on the general nervous system. Overindulgence, poor hygiene and emotional excitement are all contributing factors in the production of neurasthenia. In the treatment of such patients it is necessary to take into consideration all these factors, but of the greatest importance is the making of a thorough analysis of all the symptoms presented.

A recent analysis of a series of cases revealed the comparatively great number of neurasthenic patients presenting themselves for gynecological examinations and treatment. In a critical review of these cases the following deductions were made: First, that many errors in diagnosis are made by attributing to the uterus and its adnexa many pelvic symptoms when no real lesions existed in those organs; second, that in some of these cases operations had been recommended and in others operations had been performed for the relief of these symptoms; third, that the majority of such cases operated were either unimproved or the symptoms aggravated by the operation.

In considering neurasthenia in its relation to pelvic symptoms in women these facts must be borne in mind: First, that neurasthenia may be present without any pelvic disease; second, that neurasthenia and pelvic disease may be present in the same person without causal relation; third, that neurasthenia and pelvic disease may be present with some definite relation.

*Read at the Twentieth Annual Meeting of the American Association of Obstetricians and Gynecologists at Detroit, September 17-19, 1907.

In this discussion, however, we will limit our remarks to the first statement, namely, pelvic symptoms which are distinctly neurasthenic without actual pelvic disease, and the fact must be constantly before our mind, that neurasthenia is a functional disease, and the exclusion of real organic disease must always be made before we are justified in making a diagnosis of neurasthenia. The term neurasthenia is such a broad one that to consider it in all its phases would be beyond the scope of this paper. The condition has been variously described by different writers. Starr in a recent work describes neurasthenia as "a condition of exhaustion in the nervous system." Dana defines it as "a chronic functional nervous disorder, which is characterized by an excessive nervous weakness and nervous irritability so that the patient is exhausted by slight causes, and reacts morbidly to slight irritation."

Probably the most difficult class of cases the gynecologist, or in fact any practitioner of medicine, has to deal with is the neurasthenic without real pelvic lesion. She complains of every known symptom from the top of her head to the soles of her feet, but more prominent are dysmenorrhea, backache, pain over the ovaries and heavy dragging pain in the abdomen. These symptoms, together with tenderness on examination, would lead one to look to the pelvis for the cause of the trouble.

The clinical picture of neurasthenia is not always a characteristic one, due to the fact that almost every part of the body may be affected, but in so far as the pelvic phenomena are concerned the symptoms are usually quite definite. They are always expressive of fatigue so that some writers have proposed the name of fatigue neuroses for neurasthenia. When we recall the symptoms of neurasthenia we find that weakness, irritability and exhaustion are prominent sensory symptoms.

When these fatigue symptoms grow more pronounced they become painful, and they are then described by the patient as aches that are referred to special regions such as the occipital, the back of the neck and the back. This backache is, as a rule, referred to the lumbar or sacral region. With this pain hyperæsthetic areas of the skin often occur, especially over the vertebræ and such a sensitive area is practically the "irritable spine" formerly described by some writers. If the so-called spinal irritation is pronounced the sensation of weariness prevents the patient from sitting or standing for any length of time. This symptom of pain and discomfort is frequently referred to the

end of the spine—coccygodynia. In this connection it should be stated that not all backaches are of neurasthenic origin. Frequently faulty conditions of the spine, deformities, or injuries are causes of real backache.

The motor symptoms of neurasthenia are also indicative of fatigue and consist principally of muscular weakness, the patient complaining of being constantly tired, a feeling of never having been rested, and the sensation of being more tired on arising than on going to bed; not infrequently fatigue pain is referred to the hips, thighs or legs, or as a sensation of weight or dragging in the pelvis. Irritable bladder not associated with real pelvic disturbance is an almost constant accompaniment of neurasthenia. Such a patient complains of being compelled to urinate every hour or so even when at rest. The urine in such cases is usually normal, pale in color and of low specific gravity.

Closely associated with these neurasthenic pelvic symptoms is hysteria, and the French term *hysteroneurasthenia* is a very expressive one for the condition. In a *hysteroneurasthenic* the symptoms are, of course, more pronounced and more difficult to manage. In such patients we find the so-called ovarian pain with a sensation of swelling and throbbing in the womb. Hyperesthetic areas can be found all over the abdomen but particularly over the region of the ovaries. That it is hyperesthesia and not a true ovarian pain can be demonstrated by grasping the skin and tissues of the abdominal wall between the fingers, without making deep pressure. This procedure of eliciting pain should always be resorted to in the early part of the examination as it will be of signal benefit in aiding in the diagnosis.

Hysteroneurasthenics are exceedingly impressionable and in such cases much harm can be done by injudicious advice. Such a patient will accept almost any suggestion in regard to her condition and is always ready to attribute her suffering to some local pelvic disorder. We should, therefore, be most careful in suggesting a pelvic examination in such cases, especially in unmarried women. The suspicion that the pelvic organs are at fault is already present and it requires only the suggestion from the physician to firmly establish that idea in her mind. While a pelvic examination should never be neglected in the presence of real symptoms, too much haste must not be displayed by the physician in arriving at a conclusion. Hence, in order to divert the patient's attention from her supposed pel

vic condition, it is a good rule to always examine the other organs before making a local exploration of the pelvis.

Owing to their irritability and sensitiveness, neurasthenics cannot endure the pain and usual discomforts of menstruation as well as their healthier sisters can. They give the impression to their family and physician that the pain is extraordinary and consequently they are confined to bed during the entire period. Likewise an ordinary vaginal discharge is described as most irritating, offensive and disagreeable. Undue importance must not, therefore, be attached by the physician to such complaints unless he has personal knowledge of the real condition, for it is then more important to know "what kind of a patient the disease has than to know what disease the patient has."

The question now presents itself, what should be the attitude of the physician in the management and treatment of neurasthenia in its relation to pelvic symptoms? The treatment in general will not be detailed here. Removal of the cause, of course, whenever discovered is most important, and this may necessitate a change of scene and occupation, freedom from anxiety and worry, improvement of the digestive tract, better elimination, exercise, and in some cases isolation.

The treatment of the local condition comes in now, and it is here that errors are usually made. Too often are neurasthenic pelvic conditions treated by tampons, vaginal douches and pessaries in the vain hope that relief will result. Where no real trouble exists, of course no cure will result; instead, the patient becomes firmly convinced that her condition is an incurable one, and she soon becomes a patent medicine fiend and an increasing source of worry and annoyance to all those around her. In young unmarried women is this particularly the case, for the patient is not only unimproved after such a course of treatment, but much moral and physical harm has been done by the indiscriminate use of tampons, pessaries, douches and needless examinations.

It is quite evident that the surgeon cannot expect to remove by operation the symptoms peculiar to neurasthenia, and it is unnecessary to state that an operation should never be undertaken with the expectation of relieving such patients of their neurasthenia. If the operator removes a fibroid, he does so because it is a pathological condition but not because its possessor is a neurasthenic. If he operates for appendicitis, the appendix is removed because the actual symptoms of appendicitis are

presented. An aching tooth would be extracted in an insane woman, not on account of her insanity, but because her tooth is decayed. In other words, the surgeon should operate for surgical conditions, and not with the expectation of curing neurasthenia.

Gynecologists have been severely criticised by many writers in recent years for attributing too much importance to slight pelvic lesions of the genital organs, and for recommending operations for the relief of many symptoms which unquestionably should be classed among the neuroses. Due regard is made in this connection of the etiologic bearing which pelvic symptoms have in the production of real symptoms, and which are corrected only by operative measures, but this criticism against indiscriminate operations for the relief of neurasthenic symptoms is well merited. Too often are patients with vague neurasthenic symptoms, such as backache or a slight leucorrhea, subjected to a curettement in a hope that a cure will result. Likewise are numberless ovaries sacrificed on account of ovarian pain where no real pathological condition exists. Not only are the neurasthenic symptoms unimproved but new symptoms are added to the category which did not exist before the operation. Even where the operator is conscientious and well meaning he will frequently operate for the correction of a movable retroposed uterus or cystic ovaries in neurasthenics, with the expectation of relieving the patient of her pelvic symptoms, which in reality are not due to her pelvic organs but to her neurasthenia.

Such patients frequently make the rounds of the different gynecologists who, in their anxiety to relieve the sufferer, have at different times curetted the uterus, ablated the ovaries, removed the appendix, anchored the kidney, explored the gall-bladder and possibly operated on the stomach, while the patient still complains of backache and the various pelvic and abdominal pains. Without fearing contradiction it may be stated that every operator with any considerable experience in pelvic surgery has erred in this respect, and could cite instances of patients coming under his observation who have been operated on at different times for the relief of pelvic pain, without relief, and possibly with the statement that the patient is worse than before her first operation.

From the foregoing remarks we may, therefore, conclude:

1. That neurasthenic pelvic symptoms in women frequently exist without pathological changes in the pelvis.

2. That a careful differentiation between neurasthenia and real morbid anatomy must be made before deciding on the treatment.

3. That this form of neurasthenia is not only unimproved but frequently aggravated by surgical treatment.

524 PENN AVENUE.

CURETTAGE AND PUERPERAL SEPSIS.*

BY

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PUERPERAL sepsis in abortion and labor at term undoubtedly always existed, though I am convinced that through our pioneer population it was rare, compared with the percentage of deliveries. It became a fearful scourge when in the more populous districts the dirty midwife and almost equally dirty doctor attended most of the cases. With the advent of criminal abortion by instrumentation self-induced or caused by a professional abortionist, it became frightfully common, and though a large number died a larger number were permanently invalidated.

While many abortions have occurred and will occur from cervical laceration, weakness, subinvolution, falls, etc., I am convinced that fatal sepsis was very rare when digital and instrumental genital manipulations and examinations were not done. In other words, spontaneous, unattended abortions and labors at term were almost never fatal from sepsis. Leopold's report of 919 labor cases not examined with only two cases of possible auto-infection gives great strength to this view. True, some of these abortion cases flooded to the point of almost complete exsanguination and many of them carried putrid placental tissues and membranes for many weeks, occasionally were quite sick with fever of a moderate degree and had an occasional slight chill, but they did not die. I have, in my earlier practice, seen this condition accompanied by a putrid odor that made it almost impossible to remain in the same room with the patient, and yet they recovered.

Why did they not die? Because they were suffering from a toxic influence due to saphrophytic germs which could only live and propagate in dead tissue and whose toxins gained entrance

* Read at the Twentieth Annual Meeting of the American Association of Obstetricians and Gynecologists at Detroit, September 17-19, 1907.

into the circulation and produced constitutional symptoms *only when drainage was interfered with* and they were forced into the circulation; provided with free drainage, these cases were always immediately relieved whether placental tissues, membranes and detached necrotic decidua were removed or not.

The profession presumed that the symptoms were produced by the retention of the secundines and began their removal by finger and curette, and if it were done early, very gently, and no additional and more dangerous germs were introduced, the patient recovered at once. But many of the cases became suddenly very much worse, curettement was repeated more vigorously under the supposition that the former effect was not sufficiently thorough. In many cases, this resulted in a great increase in the intensity of all the symptoms and speedy death. In many cases, postmortem proved the uterus to be free of all secundines and with nothing to show the cause of death except evidences of inflammation of the uterus, sometimes some edema and softening of the uterus, and periuterine tissues. In other cases, the uterus was extensively softened and numerous abscesses had formed in the uterine muscularis or periuterine structures. In the chronic cases, extensive peritoneal adhesions had taken place and in many cases of the very fulminant kind, bloody serum was found in the peritoneum with but slight changes in the uterus or periuterine tissues. The cause in each case was held to be due to too late removal of the placenta and membranes. Later, the suspicion began to overtake the profession that manual and instrumental manipulations were responsible for the introduction of germs which were more virulent than saprophytes and that could pass through and multiply in living tissues as well as circulate in the blood, destroying the vitality of tissues where massed together, producing abscesses when enough time had elapsed; in other cases, multiplying in the circulatory system so rapidly as to cause death without pronounced microscopic local changes.

We had not then learned, in fact are just learning, how to cleanse our hands, and when they were cleansed they were reinfected on the way to the interior of the uterus by bedding, foul labia, hairs on the vulva, and similar conditions. The vagina was not known to be its own sterilizer if it had a chance to use its own physiologic laboratory, but we were taking it at a disadvantage and planting our cultures where they got in their work to the greatest danger to the patient.

In the best maternity hospitals where preparation, position,

attendance and dressing can be perfectly controlled, puerperal sepsis has been almost entirely eliminated. While this is true of perfectly ideal surroundings, some infection will sometimes occur, but more especially where the majority of the cases are not and cannot be placed in ideal surroundings, but every effort should be made to approximate the ideal as nearly as possible.

If the infection be saprophytic, we may expect foul odor in which dead tissues in the interior of the uterus, namely, placenta, membranes and detached decidua are attacked. This must of necessity be local and if the infection remains saprophytic, it will not endanger life, and the temperature will not likely go very high. Dead tissues, that is, necrotic fetus, may remain in the uterus indefinitely without infection.

The next degree of severity of infection will result from anaërobic bacilli, at the present time the least perfectly understood, including the *bacillus aërogenes capsulatus* and the bacilli of malignant edema. While saprophytic bacterial infection must attack and live on dead tissues, being unable to invade living tissues, it will not markedly soften or disintegrate the uterine structure. The anaërobic bacilli may be, in fact are, able to penetrate somewhat into the living tissues and one or two deaths have been attributed to infection of this nature, while streptococcus, staphylococcus and colon bacillus can invade any tissue. The bacilli of diphtheria and typhoid may also invade living tissues. Infection with streptococcus is especially virulent but is sometimes mixed with staphylococcus. Examinations of patients in maternity hospitals by Professor Edgar revealed the fact that the upper part of the vagina showed no pyogenic germs. This was true up to the introitus except where germs had been introduced less than forty-eight hours. It was found that some pyogenic germs would live four days in the upper vaginal secretions, but in 40 per cent. of the cases examined by the same author in the same emergency and maternity hospitals, the vulvar canal below the introitus contained pyogenic germs. It, therefore, becomes necessary that physicians should not only as thoroughly as possible sterilize their hands, but that the external genital should also be thoroughly cleaned up to and including the vulvar introitus before anything is carried high up in the vagina because of the danger of contamination by pyogenic bacteria from fingers or instruments carried into the upper part of the vagina. If this be done by every physician with every possible care, there yet remains the possibility of infection by

sexual indulgence up to and even including the commencement of labor. If this takes place, there is no question that in some cases it will be the cause of infection in cases otherwise treated by skillful and painstaking obstetricians.

When we have eliminated the two principal pyogenic germs there yet remains to be considered the greatest scourge and most resistant of all, the diplococcus of gonorrhea, so that, in spite of all care, we will occasionally, because of germs in the vaginal canal, viable at the time of labor or introduced by the hand of the obstetrician or by his instruments, come into contact with various infection agencies and we must be prepared to deal with them intelligently, and if possible exclude the production of uterine and periuterine phlebitis, puerperal metastatic pyemia, septic pneumonia, septic endocarditis, septic arthritis, phlegmasia alba dolens, pelvic cellulitis, and pelvic peritonitis or perimetritis, as well as the milder saprophytic intoxication involving only dead tissues within the uterus. This latter form should be called sapremic intoxication, not infection.

Prevention must be the most important treatment and always include hygienic asepsis of the patient and physician and great care in examination. No instrumentation in any variety of puerperal sepsis should be considered which denudes the uterine mucosa and opens up tissues not in any sense protected from septic infection, the utmost gentleness being used to avoid any possibility of puncturing the softened or disintegrated uterine wall. The curette, I believe, in such cases should never be used, certainly not a small or sharp one and then only in the least serious of these cases, namely, saprophytic intoxication. I have for many years been quite satisfied with a placental detacher of my own devising which answers every purpose with the minimum danger of perforation. The use of antipyretics, which depress the heart action and interfere with the oxygenizing process of the blood, can scarcely ever be indicated, sponging and cold packs, when the temperature runs dangerously high, being much safer. Cool or cold water bottles are best of all. The use of antistreptococcus serum, while it acts like magic in some cases, will prove entirely worthless in others, can do no harm and is therefore always indicated.

Strepto- and staphylococcic puerperal infections have, on the manifestation of symptoms, passed beyond all possible reach of removal by any form of curettage. While curettement can do no good it may do much harm in disseminating infection and in

uterine perforation. This latter element is important because I have known cases in which perforation of the uterus was done by a man of several years' experience and above the average ability; by another of very large experience and national reputation, noted for care in operations and original research, and by five men of international reputation, one of whom had previously declared that the penetration of the uterus with the curette was a crime, and at his next operation of this kind put the curette through the uterine wall. I have operated on three cases of puerperal sepsis illustrating the dangers of curettage. The first was five weeks after delivery, in which the uterine wall was honeycombed in every direction on one side and I could put my finger through without meeting with marked resistance. In this case I did a complete hysterectomy and lost my patient in three days. A few weeks later I operated on a second case and found that I could run my finger through the uterus with great ease. In this case I removed the adnexa on the side that was most damaged and passed drainage tubes through the posterior wall of the vagina, surrounding them with an abundance of gauze. Abscesses in the uterine tissue were freely drained into the vagina through the cervix or by way of gauze and the tube drain through Douglas' cul-de-sac. This patient recovered without special incident and remains well at the present time, three years after the operation. I believed it safer in this case to provide thorough drainage and leave the uterus and adnexa badly damaged, than to run the risk of further spread of septic infection and lessened resistance of my patient by a heavier operation.

In my third case, I operated in almost the identical manner of the second case except that the operation was done in stages, owing to the critical condition of the patient. Evacuation was done first through the uterus and vagina by dilating the vagina, cervix and pus tracts in the uterine wall. Three weeks later I made a suprapubic incision and drained through the posterior vault, removing the right adnexa, which was suppurating. The uterus in this case, as in the previous ones, was readily punctured by the finger. Recovery was tedious, but is now complete.

In view of the history of these cases and the conditions found at the time of operation, I have realized with greater force than ever before what I previously believed, that curettage in such cases exposes the patient to greater dangers and removes no risk whatever. Since writing the above, Mrs. R. F. was examined by me at my office May 6, 1905, and gave the following history:

Four months previously she had an abortion and was septic afterward, with ill health up to date. Examination revealed cervix and perineum laceration; large, rather boggy, subinvoluted uterus with marked immobility; tenderness so pronounced as to make it impossible to outline the mass of inflammatory deposits behind the uterus. She was prepared for perineal and abdominal operations. The cervix was dilated, the wall of the uterus was curetted and, on attempting to carefully curette the fundus, I perforated the uterus, entering the peritoneal cavity with a rinsing curette discharging fluid.

No further curettement was done; the cervix and perineum were repaired, the abdominal cavity was opened and the perforation was found to be located in the anterior portion of the fundus. On the right side, I found a very large pyosalpinx with suppurating ovarian cyst the size of a lemon; on the left side, was a pyosalpinx with ovarian hematoma the size of an orange. With such a wreckage of the adnexa, there was nothing left to consider but a complete hysterectomy; though it taxed the patient pretty severely recovery was without incident.

This will add nothing to the list of accidents in curettement of septic uteri. I had hoped not to make such a report myself but must do it in honesty to the profession at large and as a warning, which is a part of the purpose of writing this paper in the first place, against the use of the curette in septic cases.

1370 GILPIN STREET.

CASES ILLUSTRATING COMMON MISTAKES IN GYNECOLOGICAL DIAGNOSIS.*

BY

WILLIAM S. SMITH, M.D.,

Baltimore, Md.

OUR gynecological patients are easily divisible into two groups: First, those presenting abnormalities which are not susceptible of ready and accurate description and delineation; and second, those suffering from conditions which are promptly and easily recognized. It must be said that a very large number of the most difficult cases with which we have to deal can be placed in the former category. This statement applies with especial force to the various neoplasms and to the protean manifestations

* Read at the Twentieth Annual Meeting of the American Association of Obstetricians and Gynecologists at Detroit, September 17-19, 1907.

of disease of the Fallopian tubes. In June, 1904, at the Atlantic City meeting of the American Medical Association, Dr. T. S. Cullen with commendable candor reported a series of cases in which he had made incorrect diagnoses. A moment's consideration of the conditions to which he referred, however, cannot fail to convince one that no diagnostician, however skillful and expert, could have reached an absolutely correct conclusion concerning them. We are constantly meeting with cases in which exploratory laparotomy plays an important and a necessary rôle and our postoperative diagnoses have in recent years greatly multiplied. The cases to which I shall refer belong for the most part to another class and illustrate common and easily recognized conditions in regard to which general practitioners are constantly being led to erroneous conclusions.

The late Professor J. J. Chisolm, of Baltimore, on one occasion facetiously observed that patients had been sent to him all the way from Texas to have their ears cleaned. Recent experiences of my own have invested this remark with peculiar significance, for my patients in several instances went to considerable trouble and expense to have the existence of extremely simple ailments demonstrated.

The first two cases to which I would refer were both instances of backward displacement which had been mistaken for fibroid tumors. One of them had recently been confined and presumably on account of getting out of bed too soon had favored the development of a retroversion and retroflexion of the uterus. There had been absolutely nothing in the history or symptoms to point to a tumor, and the uterus could be easily felt and outlined through the posterior vaginal fornix. The other patient had come a long distance to have a hysteromyomectomy performed. She had been examined by four physicians who all agreed, strange to say, that a tumor had grown from the posterior uterine wall. She had passed through seven labors, one of them instrumental, and presented the classical symptoms of retroversion including backache, headache, weakness in the limbs and difficult defecation due to narrowing of the lumen of the rectum. There was a well-marked Y-shaped perineal laceration with rectocele and the uterus could be felt with ridiculous ease occupying the third degree of retroversion. There had been no unusual hemorrhage, no uterine pain, no pressure symptoms, and the diagnosis had been made from the mere presence of the uterus in its abnormal position.

Two patients were sent to me, one from the state of Virginia, with so-called large ovarian cysts and both of them had ascites. In both cases the amount of fluid was very large and one of the signs of cyst—fluctuation—could easily be elicited. This physical sign and the rapidity with which the fluid had accumulated had led to the mistaken diagnosis. The source of the trouble in one instance was an easily demonstrable cirrhosis of the liver, and in the other the array of symptoms and the urinary analysis pointed with equal certainty to chronic nephritis.

Another condition which may well present a difficult problem is the presence of chronic inflammatory lesions of the Fallopian tubes, particularly when wrapped up in extensive adhesions as they so often are. Here we may find a remarkable mimicry, as far as the mere physical signs are concerned, of a fibroid tumor. In a case recently referred to me no such difficulty was encountered. The woman had had several attacks of pelvic inflammation and at the time of her admission to the hospital was suffering from an acute attack. There was great pain and tenderness following a chill and the temperature was 103° F. Notwithstanding this history and this condition the irregular outline and firm consistence of the masses felt in the pelvis had led her physician to conclude that she was suffering from a myoma, and she was sent to be operated upon for that condition. We found a double pyosalpinx and removed the uterus with the tubes and ovaries on account of its bad condition and the difficulty presented by the extent and firmness of the adhesions.

An ailment of more than passing interest and one which now and then causes serious detriment to the reputation of physicians is pseudo-pregnancy. The remarkable exactness with which the symptoms of gestation may be counterfeited in many of these cases is well known. Occurring as they so often do in women who are approaching either a premature or a normal menopause, who are very anxious for offspring, and whose minds perhaps have become familiar with everything relating to the subject, it is not surprising that the physician is sometimes made to share in the opinion so confidently expressed by the deluded woman. It would seem that we should be ever on our guard and take nothing for granted, as the following case will show: Mrs. C., thirty-eight years old, had been married about thirteen years, but had no children. Her previous personal history had been good and she had enjoyed excellent health. When she consulted me she was sure that she was

pregnant. She not only felt that she was pregnant herself, but a physician had examined her and predicted the time for her confinement. She wished to consult me because she was extremely nervous, had little or no appetite, could not sleep, and besides the movements of the child had been causing her a great deal of discomfort. The time of her expected confinement had also passed and that fact had begun to cause her some anxiety. She stated that she had menstruated regularly up to ten months before, at which time the menses became scanty and that they had finally disappeared entirely. At about the same time she began to suffer from nausea, her breasts became larger and were painful, her appetite was capricious and her nervous system markedly deranged.

Several months later on she began to notice the movements of the child, which had gradually become stronger until at that time they were extremely vigorous and persistent. Coincident with this, her abdomen began to enlarge and had continued to increase in size somewhat rapidly. Her friends had observed the change which she had undergone and of course concurred with her physician and herself in the opinion which they held. She consented to an examination and her abdomen was explored. It was quite as large as that of a woman at the end of pregnancy but was not tense. It lacked the definiteness of outline, the ovoid shape which we are accustomed to observe in advanced gestation, but the enlargement was more generally and uniformly distributed. The umbilicus was retracted; there was no pigmentation of the linea alba and no evidence of the so-called *striae gravidarum*. Percussion gave a semi-resonant note. Very great thickening of the abdominal wall was demonstrated and in doing so much of the swelling disappeared. Auscultation failed to disclose fetal heart sounds, but did reveal decided gurgling due to imprisoned intestinal gas. The vaginal walls were not discolored, were not unusually moist nor thickened, and above all the cervix was long, conical and hard. I had no difficulty in palpating and outlining the body of the uterus which was apparently undersized. I promptly told my patient that she was not pregnant and I don't know whether she was more indignant or surprised. At any rate I shall not soon forget the mute eloquence of her expression and her attitude. She had evidently had enough of me and my opinion and was not slow in saying so.

Becoming frightened, she again called the physician who had

told her she was pregnant and he in turn sent for an able and deservedly prominent gynecologist, who promptly eliminated pregnancy but advised her to go at once to a hospital and submit to an operation for ovarian cyst. It is needless to say that the cyst collapsed and disappeared under anesthesia, and the diagnosis was eventually made of a premature menopause, a great excess of abdominal and omental fat and a gastric or intestinal disorder associated with a great deal of gaseous distention of the bowels. There was, of course, a large psychological element in this case, and it may not be uninteresting to note that the unfortunate lady who so deeply deplored my stupidity has since given me some credit for honesty, and has recently told me in the most confident manner that, although she knows that she is pregnant now, she does not think any examination necessary. It is evident that all this confusion and embarrassment could only have occurred by an unquestioning acceptance of the woman's statements on the one hand or by an inexcusably hasty and incomplete survey of the abdomen on the other.

The last patient to whom I wish to refer presented a very interesting condition of which I have seen but few examples, and illustrates the fact that the intimate relationship, the interdependence of general medicine and gynecology is not consistently borne in mind. It also shows that routine office treatment without a clear and definite idea as to the indications for such treatment and the object to be attained may strike wide of the mark. Mrs. T. came to me from one of the distant counties of Maryland. She had been given local treatment by two prominent physicians without the slightest benefit. Her history in brief is as follows: She is fifty-nine years old, and has had seven children and two miscarriages. There have been no instrumental deliveries and the puerperal periods have shown nothing unusual. She has not menstruated for five years. Had brain fever when a girl and has since been extremely nervous. Her physician also stated in a letter to me that she has a highly nervous temperament and has suffered from hysterical attacks all her life. The present ailment has lasted about twenty years and first appeared shortly after confinement, when she noticed a dribbling or flow of water. Has headache and gets very weak after slight exertion. Is suffering now from a severe and annoying bladder trouble of an intermittent character—sometimes passing urine naturally for eight to ten days and then having it start suddenly with a gush, followed by a constant

dribble during the day. Has never had any incontinence during the night, the flow stopping about eight or nine o'clock to start again in the early morning. This diurnal character of the trouble with the nocturnal intermissions would persist whether she remained in bed or not. She had often compared the sudden starting of urine to the rupture of the amniotic sac during labor. There was no pain.

With a disorder of such long duration and with such a history I felt that I should examine my patient with great care. There was no disease of the vulva or vagina, the perineal muscles were apparently normal, the vaginal outlet was good, and the cervix, the body of the uterus and the tubes and ovaries were absolutely normal both as regards their position and their condition. No pain or tenderness was shown on palpating the bladder externally and per vaginam. The vaginal walls were intact, no fistula being demonstrable by inspection, palpation and the introduction of colored sterile water into the bladder. Plain sterile water introduced and withdrawn remained clear and clean and showed the capacity to be about normal. The possibility of an intravesical growth or foreign body was also carefully excluded and there was nothing to point to disease of the vermiform appendix. Chemical and microscopical examination of the urine gave negative results—no albumen, sugar, blood, pus cells or casts. The case was clearly one of a pure neurosis of the bladder in which no local treatment was indicated, with the possible exception of massaging the urethra and overdistending the canal by the use of dilators, which has I believe been practised with some success.

What deductions are to be drawn from the recital of these cases? Surely, it is not my wish or purpose to assume the rôle of critic or censor of my professional brethren, for I am too keenly sensible of my own limitations and shortcomings. Experiences similar to those given have been so frequent of late that I have felt impelled to make a plain statement of facts for which there must be some reason. Is it true, as has been said, that three-fourths of the medical profession are incompetent? Are we teaching gynecology as it should be taught? Is the modern medical school with the extensive and awestrking equipment of its operating amphitheatres overemphasizing the importance of surgery and sending out its graduates with the ineradicable impression that most if not all the ills to which human flesh is heir are amenable to the surgeon's art? I con-

ness my inability to answer these questions, but I would respectfully plead in conclusion that some of our mistakes at least could be avoided if we would consistently follow a systematic and orderly plan of investigation.

330 NORTH CHARLES STREET.

CORRESPONDENCE.

RECOVERY OR CURE OF CARCINOMA.

TO THE EDITOR OF THE AMERICAN JOURNAL OF OBSTETRICS.

DEAR SIR:—The writer desires information regarding any alleged recoveries or cures of inoperable or recurrent carcinoma of the mammary gland.

If any case or cases are known to anyone who reads this circular and can be authenticated by facts as to the history and condition prior to recovery and the length of time which has elapsed since recovery, such information will be much appreciated and duly acknowledged.

Any well-authenticated reports of recoveries from carcinoma located in other parts than the mammary gland will be welcomed.

Cancer paste cures, X-ray cures, radium cures, or cures as results of surgical operation are not wanted.

Hearsay cases are not wanted unless accompanied by name and address of person who may give knowledge first hand.

HORACE PACKARD, M. D.,
470 Commonwealth Ave.,

Boston, Mass.

December 30, 1907.

TRANSACTIONS OF THE WOMAN'S HOSPITAL SOCIETY.

Meeting of October 23, 1907.

The President, DOUGAL BISSEL, M. D., in the Chair.

DR. H. GRAD presented a case of

ANEURISM OF THE ABDOMINAL AORTA.

I apologize to the Society for bringing before it a clinical case, which is not gynecological. However, I believe it will possess a certain interest for all of us. The history is briefly as follows:

The patient came to me four months ago, complaining of

disturbances of digestion, and of pain, which was confined to the epigastric region. Ten years before, she went to a dance. After retiring that night she had a hemorrhage from the stomach, followed by five other hemorrhages during the next twenty-four hours. She has had no others since, but for the past eight months has been quite ill.

On examination, I found tenderness, and an ill defined mass in the upper part of the abdomen. My diagnosis was adhesions following gastric ulcer. On her third visit to my office I used auscultation over the tumor mass, and was much surprised to hear a systolic murmur. Further examination convinced me it was an aneurism of the abdominal aorta. She is now taking forty drops of saturated solution of potassium iodide, three times a day, and shows a marked improvement in all her symptoms. She has no pelvic involvement of any sort.

This case is presented mainly to emphasize the fact that we gynecologists are not thorough enough in our examination of cases, and are apt to confine ourselves to inspection and palpation.

Dr. HARRISON agreed with Dr. Grad that the specialist is apt to restrict his vision to a too limited field. He furthermore thought such a specialist unfit to practise his own specialty.

Dr. HARRISON reported a case of

GANGRENE FROM MESENTERIC THROMBOSIS.

In June a lady came to my office on Saturday, complaining of violent pains in the abdomen. There was no fever nor any other symptom of apparent gravity. I thought her pain due to a simple colic, administered a sedative, and told her I would call and see her later. When I called I found her still suffering a great deal of pain. The next day her pain was violent, and there was some abdominal distention. Some difficulty in moving the bowels suggested ileus, and I called Dr. Noll in consultation. An enema of ox-gall was tried. A movement of the bowels resulted, and on Monday the patient was better. On Tuesday and Wednesday the symptoms still suggested some form of intestinal obstruction. She had violent pain, and could retain nothing in her stomach except a little beef juice. Some blood was passed per rectum and an enema brought away a small amount of fecal matter. I called another consultation. There was a vague feeling of a tumor mass in the pelvis, and we decided to operate. Thursday night at eleven o'clock the patient was taken to St. Elizabeth's Hospital, where I operated with the assistance of Drs. Noll and Taylor, Dr. Graham in the meanwhile giving an infusion of salt solution.

On opening the abdomen, I was astonished to find the intestines, as far as one could see, nothing but a black, necrotic mass. The mesenteric vein was thrombosed, and, although I was unable to demonstrate the fact, I am sure the artery was in the same condition. I resected ten feet of gangrenous gut. The

patient rallied well from the operation, but died the next morning.

This case was very interesting to me in regard to the question of diagnosis, which I don't believe was possible under the circumstances. I would like to add one point in the history which may have some bearing on the etiology: Having been told in Germany that she must, under no circumstances bear another child, the patient took, shortly before seeing me, ninety grains of quinine at one dose! It occurs to me that perhaps this large dose of quinine may have caused a paralysis of the heart muscle.

The question here arises—when is surgical intervention indicated? If you operate too soon you may not resect enough of the intestines. Or, on the other hand, you might operate unnecessarily, for thrombosis and embolism may take place much oftener than we suspect, to be cured spontaneously by collateral circulation.

DR. HERMAN GRAD read a paper on

OBLITERATING THROMBOSIS OF THE OVARIAN ARTERY.*

TRANSACTIONS OF THE SECTION ON OBSTETRICS AND GYNECOLOGY.

NEW YORK ACADEMY OF MEDICINE.

Meeting of November 26, 1907.

HOWARD C. TAYLOR, M. D., *in the Chair.*

ECTOPIC PREGNANCY ILLUSTRATING ALMOST FATAL HEMORRHAGE
THROUGH THE OSTIUM ABDOMINALE WITHOUT PERFORATION.

DR. PHILANDER A. HARRIS, of Paterson, presented notes on this case. The patient had been married to her present husband ten months, and to her first husband two years and three months. She first menstruated at twelve and every twenty-eight days from then until her present illness. After the age of sixteen when she had some slight womb trouble, she always had severe pains the first day of menstruation, with a dull heavy feeling in the pelvis on the day following menstruation. The menstrual flow always lasted five or six days, and she soiled from eighteen to twenty napkins. She had no pregnancies until the present tubal one. She last menstruated on February 12, 1907. Blood next appeared five weeks later, on March 17. With its appearance she had pain in the hypogastric region but the pain was not nearly so severe as the pains usually accompanying menstua-

*See original article, page 218.

tion. A little blood appeared from the vagina almost daily from March 17 until April 2. She felt moderately well and saw no blood for twenty days or until April 22. One day preceding the appearance of blood, namely on April 21, while out carriage riding she felt what she termed a "chilly coldness" across the lower abdomen. She, however, ate a good dinner and retired at 8.30 o'clock. Shortly afterwards she was awakened from sleep with a severe pain in the hypogastric region. The pain was more severe than that of any menstruation, was central and referred no more to one side of the pelvis than the other. She tried lying on her back with knees drawn up; she sat up and leaned forward in bed, and assumed all sorts of positions, none of which afforded her relief. She vomited. The pains suddenly ceased in twenty minutes, or half an hour, after which she slept the entire night through. On the following morning, April 22, she felt tenderness across the lower abdomen, which was particularly noticeable when walking or upon her feet; however, she attended to her household duties and was up almost all of that day. A little blood appeared from the vagina which was the first observed since April 2. She slept fairly well on Monday night and on Tuesday morning, April 23, she was awakened at 6.30 o'clock with a severe pain in the hypogastrium. This colic was attended with severe pain in the right shoulder from which point the pain ran all the way to the right iliac region. This was the first time that pain was referred to one side of the pelvis. While the pain was severe she vomited three or four times. The severe colic lasted half an hour or so and was attended and followed with a great deal of soreness in the lower abdomen, on which account she remained in bed all of Tuesday, April 23. On April 24 she went about the house although still feeling some soreness in the lower abdomen. On April 25 there was still soreness there but she remained up most of the day. At 7 o'clock that evening, while at dinner, she experienced a severe pain in the epigastric region. Supposing it was in her bowels she at once took some citrate of magnesia. The pains increased. She vomited. She said she felt as though she was dying. She was helped to bed while moaning with pain. Dr. Tuers was called in but was unable to perceive any pulsation at either wrist. She appeared pronouncedly exsanguinated and, after obtaining a very little history from her, he diagnosticated the case as one of tubal pregnancy. Dr. Harris saw her one hour after the beginning of her colic. There was not the slightest flickering of pulse in either wrist. There was extreme pallor, thirst, but she did not exhibit the extreme restlessness so often seen in the tragic stage of this disease. She was removed to the hospital and placed at once on the operating table. Three pints of normal salt solution were infused into a vein of the arm and within five minutes the pulse was perceptible at the wrist. The abdomen was opened and a quart or two of dark fluid blood was removed from it. A large lot of dark clots were taken from the cul-de-sac of Douglas

and pelvis, and a distended right tube measuring two inches in diameter and apparently still enveloping the fetal products was tied off and removed. The patient was sent to her room with a pulse of 130 and respirations of 40. When the abdomen was first opened blood was seen to be escaping from the ostium abdominale. A careful examination of the tube failed to show any evidence that there were perforations or bleeding from any point except at the ostium abdominale. She made a rapid and complete recovery. A section of the tube revealed a fetus about one and three-eighths inches in length, which was presented to the Section. The particular interest in this case attached to the fact that a very large quantity of blood (two or three quarts), enough probably to have produced death (if the patient had not been saved by operation), had escaped entirely from the ostium abdominale and without discoverable rupture of the tubal wall or effort at tubal abortion. By an examination of the specimen it might readily be seen that one and one-quarter inches of the fimbriated end of the tube was not enlarged nor materially altered from normal. This pregnancy, as might be seen from the size of the child, was probably progressive for at least ten or eleven weeks. Although he had operated upon a large number of cases of tubal pregnancy in all stages of advancement, many of them before rupture of the tube wall, this was the only instance in which the patient had closely approached death from simple bleeding at the ostium abdominale. It was seen that the specimen showed in the last inch of the fimbriated extremity of the tube no inclination whatever to dilate or allow the fetal products to escape. The tube wall enveloping the fetus was intact and presented no evidence of perforation at any point.

ADVANCED BROAD-LIGAMENT PREGNANCY.

DR. RALPH WALDO LOBENSTINE reported this case. The complete report appears in the *Lying-In Hospital Bulletin*. He said that rupture of the ectopic gestation sac into the space between the layers of the broad ligament was unusual. Up to the present time, comparatively few cases of "advanced true broad-ligament pregnancy" had been reported. Cragin, who had reported several *advanced* cases of extrauterine pregnancy, had but one true broad-ligament pregnancy, at or near term. In that case, the child was extracted alive. According to Williams, this condition occurred but once in fifty specimens of extrauterine pregnancy (and this case was not at term), also but four times out of 276 cases, collected by him from the articles of Mandl, Schmidt, Kustner, and Fehling. De Suoo, in fifty-one cases of ectopic gestation, in Kouwer's clinic, at Utrecht, reported but two cases of broad-ligament pregnancy. One of these was an advanced case with the child living. Whiteford reported one broad-ligament pregnancy with the child alive at the fifth month. Isolated cases have also been reported by

Schauta, Rödiger, Landau, John W. Taylor, Fairbairn, Sittner, R. P. Lyle and a few others. In the typical cases, the peritoneal leaves were stripped back in such a manner as to give a sessile tumor. This stripping back of the peritoneal leaves might be very extensive as pregnancy advanced. In the less typical cases, the growth of the ovum caused a more or less pedunculated tumor, as in a pedunculated intraligamentous cyst. In either case, there might or might not be a typical amniotic sac present. The placenta might occupy any portion of the wall of the gestation sac. The extraperitoneal gestation sac might rupture into the peritoneal cavity, at any time, becoming thus a case of "secondary abdominal pregnancy." As was pointed out by H. Rödiger, etc., cases of abdominal pregnancy, in which the "posterior sheath" of the broad ligament formed one wall of the gestation sac and "peritoneal adhesions" the rest of the sac wall, were at times easily confused with cases of "true broad-ligament pregnancy." In the last thirty cases of ectopic gestation at the Lying-In Hospital, this condition of broad-ligament pregnancy was found three times, while the present case was the only one of advanced broad-ligament pregnancy. The case was the following:

Mrs. K. D. C., aged thirty-two, para 1, entered the hospital April 16, 1907. Previous history negative. Present history: Had been treated by private physician, as a case of "intrauterine pregnancy." There had been amenorrhea for eight and a half months. There had been a gradual but steady loss of flesh. The doctor denied all history that would have led him to suppose the case to be one of ectopic gestation. The patient, however, had complained during recent months of more than the usual amount of abdominal pain, and there had existed an irregularity in the expansion of the two sides of the abdomen. The fetal heart was said to have been heard up to two weeks prior to the admission of the patient to the hospital. During these two weeks the doctor became aware that the patient was going down hill rapidly. The abdomen became much more distended; there was vomiting and diarrhea, rapid loss of flesh and strength. On admission the patient was practically moribund, so that all operative treatment was out of the question, for the time being, at least. Stimulation and an intravenous infusion were given. The picture was more typical of a large ovarian cyst, with beginning peritonitis, than that of an ectopic pregnancy. There was extreme emaciation with a greatly distended abdomen. A distinct fluid wave could be made out over the lower part of the abdomen. There was a flat percussion note over this same area. By bimanual examination nothing could be felt, excepting bulging fornices and well over in the left flank a hard mass, which was thought to be a fetal head. The patient's temperature was 99° F., the pulse 120. There was vomiting and diarrhea. There was a brownish discharge from the uterus. The urine showed a marked trace of albumin, no acetone, no excess of indican, no

casts. Red cells 1,600,000, hemoglobin 27 per cent. On the following day, April 17, it seemed best to operate, as the patient's condition had apparently improved slightly. They feared, however, the shock of the operation. A median incision five inches long was made just above the pubis. The parietal peritoneum was greatly injected and was slightly adherent to the underlying tumor. After opening the peritoneum, separating the delicate adhesions and walling off, as far as possible, with abdominal pads, a large trocar was plunged into the cystic mass, and ten quarts of bloody fluid removed. The opening in the sac wall was then enlarged; the hand was introduced and a child extracted. They now found that the posterior layer of the left broad ligament had been stripped backwards and upwards, giving them an immense cavity the site of a true broad-ligament pregnancy. Both leaves of the broad ligament were greatly thickened. The bleeding at this time was not great, owing to the fact that the patient had almost bled herself out into the broad ligament, before admission to the hospital, and that the child was dead. The placenta was found to lie in the bottom of the cavity, posterior to the uterus, but partially attached. It was rapidly removed, and although there was but moderate oozing, the cavity was packed with plain sterile gauze. The edges of the sac were now united to the abdominal wound by interrupted sutures of No. 2 chromic gut. The two angles of the wound were closed with silkworm gut and a copious dressing applied. The patient was too sick to withstand the operation more than a few hours. After death the packing was removed and the fact verified that all bleeding had been checked, and that the layers of the broad ligament formed the boundaries of the gestation sac. There was moderate peritonitis about the upper portion of the sac. The child weighed 2,100 grams, had been dead for about one week and was just beginning to macerate. The case was of very special interest, because of the large amount of bloody fluid present, the hemorrhage being due to the "premature" separation of the placenta. This accident, of course, was responsible for the death of the fetus.

DR. BROOKS H. WELLS asked if it were not possible to have a serious amount of hemorrhage without any visible rupture from an ectopic gestation tube as large as that shown by Dr. Harris. The wall of a gravid tube was relatively very thin. The syncytium about the villi rapidly eroded and grew through such thin walls, so that after a certain period had been reached, usually when the tube was smaller than the one shown by Dr. Harris, the tube would sweat blood without there being any visible rupture. If sections could be made of Dr. Harris' specimen he had but little doubt that one would find numerous places in the outer wall where capillaries of the villi penetrated and disappeared leaving open ends.

DR. H. N. VINEBERG wished to corroborate what was said about hemorrhage occurring from the walls of a pregnant tube

without leaving perceptible openings. With regard to the treatment of these cases, at present the tendency was to wait until the patient rallied. Wait three or four weeks until the patient gained strength. It had been shown that patients did not die during this waiting period. This was important. If one has not the proper equipment, the patient had better be left alone. To operate properly in these cases required considerable experience. Dr. Vineberg personally operated upon these cases. He had had over eighty and amongst them were sixteen with profuse internal bleeding, the patients being almost pulseless; they recovered after the abdomens were opened and saline solution injected. The relation of the second case was very interesting and there was one thing he would like to emphasize, the fact that they found a uterus the size of a three months' pregnancy. That was a valuable point in the diagnosis. Where one was suspicious of a full term pregnancy outside the uterus, the uterus would be found the size of a ten or twelve week pregnancy and yet empty. He had one patient in mind with an enlarged but empty uterus which led him to make the diagnosis of full term pregnancy outside the uterus, with a dead child. This woman recovered.

Dr. J. RIDDLE GOFFE agreed with Dr. Wells in his statement, and said that at the meeting of the American Medical Association at Portland, Oregon, cases of ectopic pregnancy were reported in which there were hemorrhages but no source of the hemorrhage would be found except by very careful examination. Regarding immediate operation and the stress laid upon it, one should stop to consider whether that was the wisest course to pursue. At the last meeting of the American Gynecological Society a gentleman from Cleveland, Ohio, laid stress upon the point of waiting until reaction came on. He reported sixty cases and he maintained that he had failed to find hemorrhage going on; in other words by waiting until reaction had set in, he found hemorrhage had ceased. The probabilities were that there were thousands of cases of ectopic gestation that recovered spontaneously. Of the sixty cases reported the patients recovered in a week or two and then were operated on with safety. F. F. Simpson also reported cases in which the same treatment was applied. These men were convinced that it was better to wait until reaction had occurred and then they could operate with greater safety. In the case reported by Dr. Harris, while the woman was safe in the hands of an expert, he believed it was unfortunate to teach and urge immediate operation in these cases. In this case, while the pulse could not be counted, it seemed that the woman was strong enough to be taken to the hospital and subjected to operation; it seemed to him that any woman who could stand such treatment would undoubtedly have recovered from her immediate danger; then after the shock had disappeared she could have been operated upon. He believed that was the proper course to pursue.

DR. JAMES N. WEST said the subject brought up by Dr. Harris was important and it seemed that the tendency of the men who had discussed this subject had been to indicate that these cases did not bleed to death but recovered naturally after being placed under proper conditions. Dr. West thought this was a grave mistake. Many of these patients bled to death. The failure of a man who was an expert to move rapidly was a very grave error. In the hands of those skilled in the work it was not a difficult matter to open the abdomen, seize the tube and remove it; all should be done in fifteen minutes and with the use of but four or five instruments. In his opinion the first thing to do with a patient who gave evidences of exsanguination and shock from a ruptured ectopic was to start intravenous infusion and administer digitalis and whiskey and normal saline per rectum. If the patient responds by the time the few things that are necessary for the operation are ready and they usually do, the pulse would be found to be better and the operation could be performed. He had two cases which were illustrative. In one there were evidences of ruptured ectopic at 9 P. M. At 1 A. M. he found the woman presenting the picture of one dying. He immediately opened the abdomen and found what appeared to be an interstitial pregnancy, with a large fetus and an abdomen distended with blood, the blood still pouring from a torn vessel. That woman was going to bleed to death and she did bleed to death, before he could finish. In another case of the same nature and under similar condition he proceeded along similar lines. In fifteen or twenty minutes the patient's pulse went up nicely and he operated and the patient made a good recovery. There were undoubtedly a certain number of cases that would die if not interfered with. Perhaps, however, the speakers were right in the contention that the operation should not be done by one who was not an expert.

DR. WILLIAM S. STONE said that it was too bad that they could not go away from the meeting and follow the advice that Dr. Goffe had given. Every now and then cases would die without operation. A few years ago when Dr. Taylor and he were just out of hospital they curetted a woman; at that time they always packed the uterus after curetting. During the operation he discovered a mass behind the uterus which Dr. Taylor also felt. Neither of them thought it was an extrauterine pregnancy. Next evening the gauze was removed and the patient felt well and went to sleep. At 5 A. M. it was noted that the woman was breathing with difficulty and the nurse sent for Dr. Stone. He found her dead. The abdomen was filled with blood from an ectopic pregnancy which had ruptured before he curetted her and again that night.

DR. BROOKS H. WELLS wished to speak to the point Dr. Goffe had raised, namely, Shall we operate with the patient in shock or wait for the patient to recover from the shock?

He had operated upon quite a large number of cases of ectopic

pregnancy in serious conditions of shock and all of his cases had recovered. Twenty-three years ago, when assistant to the late Dr. Paul Mundé, within a period of a month he saw two cases of ectopic pregnancy in which rupture had occurred. Because of shock and uncertainty of diagnosis, operation was deferred and he had watched the women die. Autopsy showed that they had bled to death from ruptured tubal pregnancy. At that time only a few such cases had been operated upon. Ten years before (in 1876) Parry, a coroner's physician in Philadelphia, had called the attention of the profession sharply to the importance of the subject in a monograph recording 500 cases. In nearly half of these cases the evidence was obtained from the dead house, the cause of death in many being hemorrhage from a ruptured ectopic pregnancy. He knew personally of other cases where death had occurred from the same cause.

It was true that a very large proportion of cases with tubal pregnancies would not die. It was also true that a large proportion of cases of appendicitis would recover without operation. But which ones? Could any one always decide correctly?

He did not give these patients stimulants before operation, but during and after operation.

He had several recorded cases where active bleeding was going on at the time of operation. Usually in cases where the blood loss had been great it would be wrong and foolish to waste time during the operation to make the careful examination necessary to determine this point.

Undoubtedly without the necessary surgical skill the waiting policy was best, but, if the patient could be put in the hands of one reasonably expert in abdominal surgery, rupture with serious hemorrhage having occurred, he would say operate at once and do not wait to see whether the patient is to die or recover.

DR. J. RIDDLE GOFFE asked Dr. West if he understood him to say the woman died after he had operated.

DR. WEST replied yes.

DR. HARRIS said that he spoke of tubal pregnancies in which the tube still enveloped the fetal products. Of course there was a rupture inside the tube. He believed two or three quarts of blood came from the rupture. The patient he reported was taken to the hospital nearby in an ambulance. Dr. Harris said he had a large number of tubal pregnancy specimens which showed blood being forced out when the specimen was in a solution of formalin: the formalin caused the tube to contract and blood oozed out making it look like a little bunch of fine roots. As to whether they should operate upon cases which were undoubtedly in the tragic stage, or whether they should wait, he had tried both and he believed in operation. Intravenous infusion was given when the ether was commenced. He cautioned against giving too much saline solution because it would go right out through the bleeding tube.

DR. W. H. W. KNIPE presented a paper on

UTERO-VESICAL FISTULÆ.

(See original article, page 211).

DR. H. N. VINEBERG said he was called last summer to see a patient who had been delivered three days before by forceps. The woman was forty years old. The day following she had temperature and distended abdomen. When he heard the history he feared that there was a tear into the broad ligament and peritoneum. In speaking of the case the doctor told him that the urine drained after delivery and contained bubbles of air and blood. He did not make an examination except to satisfy himself regarding the condition of the broad ligament. The next day he examined the patient under an anesthetic. In passing the fingers to the side of the uterus and cervix he entered a cavity which contained foul smelling fluid which proved to be decomposed urine. In the use of the forceps the broad ligament and ureter had been torn and there was a leakage of urine. The patient died from peritonitis.

DR. JOHN O. POLAK reported

ELEVEN CASES OF CESAREAN SECTION.

In this series, seven of the operations were done for contracted pelvis, three of which could be classed among the relative contractures. Two were for dystocia resulting from ventro-fixation of the uterus, and two for dystocia from incarceration of a tumor in the pelvis in advance of the head. In all the abdominal incision was made to the right of the median line, with the umbilicus its central point, thus bringing the uterine incision in the upper, thickened portion of the organ. Only in the first case was the uterine incision extended low enough to reach the bladder. A longitudinal incision of the uterus, through its upper anterior surface, was made in all of these patients except in the two instances of ventro-fixation, when the uterine wound was in the posterior face of the organ. In all instances the uterus was everted by an assistant as the child was withdrawn, thus permitting him to work through a short abdominal incision, minimizing the trauma, and handling of intestine which occur with the long incision. In only one instance was a tourniquet used to control hemorrhage; in the last ten cases of this series digital compression of the broad ligaments was made by an assistant. The mode of uterine suture was as follows: The two sides of the uterine incision were held parallel and everted by an assistant and long straight Keith needles armed with No. 2 ten-day chromic catgut were passed at half-inch intervals through both sides not including the mucosa. These were tied from above downward and buried by a fold of peritoneum brought over with a continuous catgut suture. A gauze drain was used twice; in both

instances it was necessary to tampon the uterus for hemorrhage before the sutures were tied. An end of the gauze drain was carried through the cervix to the vagina. This was withdrawn in twelve hours. The pelvis was always mopped dry and the omentum placed over the intestines and behind the uterus before the abdomen was closed. Chloroform-oxygen was given with an open Esmarck mask, with the oxygen tube run into it and this had been the most satisfactory anesthetic. The narcosis was begun as the final scrubbing of the abdomen was started. This diminished the degree of fetal asphyxia. Thirty minims of ergotole was given just as the anesthetic was started and a second thirty minims as the suture of the uterus was begun. Another point noted was the smoothness of the convalescence.

DR. W. WYLLIS BANDLER reported a case of

CLASSICAL CESAREAN SECTION.

The patient was twenty-six years old, first pregnancy. The membranes ruptured eighty hours before he saw her. She had been in labor seventy-two hours, the pains at first being strong, later on diminishing in intensity and then ceasing. At the end of seventy-six hours, the patient was put under anesthesia and during a period of forty minutes four attempts at extraction with forceps were made, the forceps either slipping or no progress being made. When he first saw her about four hours after these attempts the patient was in good condition, the pulse and temperature being normal. The uterus, however, was firmly contracted and no heart sounds could be heard. Vaginal examination showed the cervix to be completely dilated and the head at the brim, held by the contracted uterus but not molded. The vagina, perineum, and vulva were swollen and edematous. Owing to the diagnosis of justo-minor pelvis, and disproportion between pelvis and fetus, the choice of procedure lay between Cesarean section and craniotomy. The fetus was dead, hence craniotomy should have been indicated. Owing to the condition of the vagina and vulva, the size of the pelvis, the absence of temperature and the good condition of the patient, he advised Cesarean section which he performed that afternoon at the Post-Graduate Hospital. The usual incisions were made and the uterus was sewn by deep and superficial interrupted chromic sutures. The patient's recovery was without any unusual manifestations.

Cesarean section was originally done only for absolute obstacles, such as a very contracted pelvis, or tumors, which would not even permit of extraction with perforation. Then the indications became relative and Cesarean section was done to avoid perforation. It was done in neglected transverse presentation with a living child, to save a child in cases of severe eclampsia, to extract the child when the mother was moribund, and in many cases of contracted pelvis. Cesarean section now had more extended

indications among which might be mentioned the following: (1) Atresia of the vagina. (2) Carcinoma of the cervix. (3) In primiparæ, where, through advanced age or other causes, the birth canal was undilatable, or where the child could not be delivered without deep lacerations and destruction of tissues, even though the pelvis and the head were normal. (4) Wherever rapid delivery meant saving of the child. (5) Eclampsia. (6) Some cases of placenta prævia centralis. (7) Justo-minor pelvis. (8) Flattened rachitic pelvis. Cesarean section was considered by many to be often more advisable than either high forceps or version as could be seen from the fact that it was frequently done in cases where the C V was from 8 up to $9\frac{1}{2}$ cm. with an external conjugate from 17-20½. Therefore, to-day the classical Cesarean section was very frequently done to avoid the dangers consequent on the application of forceps to a head not engaged in the pelvic brim or, more especially, to avoid the dangers consequent on version. In this case Cesarean section was done for the third of the above mentioned indications.

DR. BANDLER also reported a case of

VAGINAL SECTION.

Mrs. B., twenty-seven years old, married six years, two children, one five years and the other four years ago. Labors were normal. She had had three abortions, one six years ago, one three years ago and one, one year ago in the third month. During the first six and a half months of this, the last pregnancy, the patient was constantly nauseated, dizzy and vomited frequently. During the next succeeding four weeks the vomiting, nausea and dizziness were more marked, the patient being practically confined to bed. She suffered from pain in the right lumbar region during this pregnancy and from the same pain in the pregnancy of four years ago. Sixteen days before the operation there occurred a slight general jaundice of increasing intensity but not of very deep hue. The patient vomited practically day and night and lost so much in weight that her neighbors scarcely recognized her. The temperature was 101.5, her pulse was from 110 to 130, and her urine contained albumen and pus cells. Dr. Bandler was then called in to see the patient and made the diagnosis of pyelitis and the pernicious vomiting of pregnancy. Because of the jaundice immediate removal of the fetus and of the placenta was advised and vaginal Cesarean section was done a few hours after he first saw the patient. The anterior vaginal wall was incised transversely, an inch above the external os and was dissected back to the vesico-uterine fold of the peritoneum. A transverse incision was made posteriorly about an inch above the external os and the vaginal wall was dissected up to the cul-de-sac of Douglas. The cervix was then split in the median line both anteriorly and posteriorly, for a distance of 4-6 inches. Version and extraction was then performed and the placenta and

membranes were manually removed. Ergotole was administered hypodermically and a hot intrauterine douche was given. The incisions were sewn with chromic catgut sutures and a strip of iodoform gauze was introduced into the uterus. The patient made an uneventful recovery.

In this case the continued vomiting and the jaundice made hurry an essential factor and within three hours after the patient was seen the operation had been performed.

The point in favor of vaginal section was, that the uterus might be emptied by *forceps or version even without labor pains*.

The value of vaginal section lay in the fact that it was applicable even in cases of completely closed cervix and before labor had begun.

DR. J. RIDDLE GOFFE then reported one case of vaginal section in a patient gone to the sixth month and with a dead fetus. The cervix was very contracted, about one and a half inches in length, and without any dilatation. An operation was done, such as Dr. Bandler had described. Dr. Goffe's experience with Cesarean section was rather limited. He had had four cases and all were successful to both mother and child.

DR. WALTER B. JENNINGS read a paper on

DELAYED LABOR.

The length of normal labor varied within wide limits, but the average duration might be taken as eight hours in multiparæ while in primiparæ the time was usually double that or longer. The average duration of the first stage in primiparæ was fifteen hours; second stage, two hours; third stage one-half an hour. The average duration of the first stage in multiparæ was eight hours; second stage one hour; third stage one-half an hour. By delayed labor he meant one in which the frequency, strength, duration and expulsive character of the uterine pain had been so changed as to prolong the second stage of labor so that either the life of the mother or that of the child was endangered. In the first stage of labor one of the most common causes of delay was a rigid os due to old inflammatory conditions, malignant disease or cicatrix. These, however, should not be classed with those of delayed labor in the true sense of the term, but were due to some abnormality of the soft parts. Dr. Jennings considered briefly uterine inertia, consequently the many forms of pelvic deformities were excluded. Multiple pregnancy which caused a loss of tonicity, uterine tumors, excess of liquor amnii causing overdistention were among the local causes, as well as an over-distended bladder or rectum. Occasionally a soft sagging uterus markedly bent forward, together with a pendulous abdomen, would interfere with the action of the uterus. Among the causes were the following: A lowering of the bodily condition of the patient, rapid childbearing, anemias, wasting diseases, psychical and emotional disturbances, fatty changes and

atrophy of the abdominal muscles, or separation of the recti. Uterine inertia sufficient to cause delayed labor was of comparative frequent occurrence and Acconci, from a study of over 2,000 labors, said that it occurred in 6 per cent. of the cases. It had been stated that uterine inertia might be the cause of prolonged gestation. There was no standard by which the character of the labor pains could be measured. Clinically, however, the efficacy of uterine contractions might be measured by their effect upon the progress of labor. In normal labor, the contractions of the uterus occur infrequently in the early stages and gradually increase in frequency, intensity and duration until labor was terminated. In many cases prolonged labor was commonly said to be due to the undilated cervix, when as a matter of fact it was due to a faulty uterine contraction; primiparæ over thirty-five years old were exceptions to this. In other words the majority of cases of delayed labor were not due to the resistance of the soft parts but to a lack of the force from behind. Delayed labor was of little importance in the first stage, if the membranes have not ruptured, but during the second stage, the life of the child was endangered and if it was towards the termination of labor postpartum hemorrhage might take place. Dr. Jennings had a series of forty-five selected cases of primipara in which twenty-five cases were instrumental, fourteen were in labor from twenty-four to forty-eight hours, in one case labor was induced. Among the remaining cases, one was in labor eighteen hours, five fifteen hours, four thirteen hours and eleven ten hours or less. Of the fourteen cases that were in labor twenty-four hours or longer, ten were instrumental. The value of manual dilatation of the cervix in cases of uterine inertia had been disputed. Some use instrumental dilatation. During the first stage, quinine, strychnine and sugar have been used with varying results. Pressure upon the fundus of the uterus was of benefit in some cases. In the second stage, after full dilatation and the head in the pelvis, forceps should be applied. He believed in early application of forceps in the second stage of labor. Every woman had the right to demand every alleviation from suffering which medical science had provided, such as anesthesia, asepsis and rapid delivery. Given a case of labor with the os uteri fully dilated and obliterated, membranes ruptured, bladder and rectum empty, and asepsis, abuse was not possible. It was his rule to use forceps when no progress had been made for two hours. The old idea that one should wait until there were signs of danger to the mother or child was decidedly erroneous.

DR. JAMES H. WEST, speaking regarding the use of forceps, said that he would like to call attention to the fact that Emmet many years ago brought this matter before the profession. When the head was neither rotating nor descending, with intermittent pains, forceps should be applied. In other words, when the head became blocked in the pelvis, we should not wait because of the increasing danger to the soft tissues.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

*Twentieth annual session, held at New Orleans, La.,
December 17, 18 and 19, 1907.*

*The President, HOWARD A. KELLY, M. D., of Baltimore,
in the Chair.*

PERINEPHRITIC ABSCESS FOLLOWING PARTURITION.

DR. J. SHELTON HORSLEY, of Richmond, Va., reported three cases that he had operated upon. Attention was called to the necessity for early diagnosis in order to give the patient the benefit of an early operation, as all statistics on this subject showed that the mortality of this disease increased as the operation was delayed. He laid stress upon the occurrence of pain in either flank a few weeks after parturition, even in cases that underwent a comparatively aseptic delivery. The bending of the body to the affected side, stiffness of the spine, slight limp in walking, and pain on pressure over the affected flank were very important early symptoms. Later there was muscular spasm and a decided mass could be felt over the region of the kidney. Constipation was always marked, due partly to the patient's dread of muscular effort. The usual constitutional signs of sepsis appeared as the disease progressed. All of his cases were on the right side. He attributed this to the fact that the right kidney and perinephritic tissue were lower than the left, and were consequently more likely to be injured by the bearing-down pressure of the pregnant uterus during parturition. This afforded a point of least resistance in the perinephritic tissues of the right side, and germs which were absorbed by the lymphatics of the uterus might readily gain a foothold here. Treatment should follow the diagnosis at once, and should consist in a lumbar incision, as in an operation for nephrotomy, and drainage with a tube of large caliber.

POSTOPERATIVE COMPLICATIONS IN ABDOMINAL SURGERY.

DR. CHARLES M. ROSSER, of Dallas, Tex., said, among other things, that shock, whether due to basic inhibition or vaso-motor paresis, could not be overcome by stimulants to an already exhausted nerve center, but position for the purpose of relieving cerebral anemia from hemorrhage, saline solutions to enlarge the volume of the blood current, adrenalin to restore the equilibrium of the blood pressure, and morphine to give balance to the

flagging vital forces were the remedies. A rubber bandage or suit by limiting circulatory necessity might be used either as a precaution or treatment. Postoperative peritonitis resulted from excessive trauma or infection. Drainage was the best safeguard after asepsis. If required, reopening for drainage was to be done with the least possible trauma and minimum amount of anesthetic. Ileus or other obstruction might be treated by enema of alum solution which would reverse peristalsis, and gas distention by egg turpentine emulsion thrown high up. Inhalation pneumonia suggested mouth and pharynx antisepsis, and was treated in the usual way. Hypostatic pneumonia was not so common, since physicians did not insist upon decubitus as a routine.

SOME POSTOPERATIVE COMPLICATIONS OF PERITONITIS.

DR. RANDOLPH WINSLOW, of Baltimore, Md., read a paper on this subject, in which he reported the histories of two cases that had recently occurred in his practice. One of them was a case of appendicitis, with peritonitis, followed by intestinal obstruction from adhesions. Operation was successful. The patient was a girl, twenty years of age.

The second case was one of appendicitis and peritonitis, followed by extensive adhesions, which caused intestinal obstruction. Enterostomy was done, followed by anastomosis, and subsequently by resection and enterorrhaphy. This patient was a male, aged nineteen. Patient recovered.

DR. C. JEFF MILLER, of New Orleans, La., read a paper entitled

ACUTE DILATATION OF THE STOMACH AS A POSTOPERATIVE COMPLICATION.

The author said that among the unexpected complications that might arise after surgical operations, no condition had furnished a more distressing chapter than acute dilatation of the stomach. This complication was probably as serious as any postoperative complication that might arise. The latest statistics, gathered by Simpson, showed that of 128 cases, eighty-six died. Kayser's collection of sixty cases, quoted by Bloodgood, yielded 71 per cent. of deaths. Conner's exhaustive study of 102 cases showed seventy-four deaths, or 72.5 per cent. deaths, and twenty-eight recoveries.

The treatment was summed up in these words: Early recognition, prompt emptying and washing of the stomach, and such posture as might release a mesenteric compression. To these might be added any eliminative measure indicated, if the emunctory organs were inactive. Early diagnosis was essential to successful treatment. Judging from the cases reported in which operation was done with the idea of relieving obstruction,

surgery was not encouraging. In spite of the high mortality, however, there was strong evidence to prove that many cases could be saved by prompt treatment. The author reported a case upon which he had operated successfully.

The foregoing papers were discussed jointly.

DR. HENRY T. BYFORD, of Chicago, said that his experience had been that the longer the anesthesia, the less nausea there was, and the slower a patient came out from under the influence of the anesthetic, the less nausea there was. He had found it advantageous to give from one to two ounces of brandy just before giving the anesthetic, in order to diminish the amount of anesthetic necessary, as by so doing there was much less lung irritation. He had also noticed the good effect of giving an enema after operation, putting in the enema one-half or an ounce of alcohol.

DR. GEORGE BEN JOHNSTON, of Richmond, Va., could not agree with Dr. Byford that prolonged anesthesia was wise. The smallest quantity of any anesthetic should be given, and the anesthesia should occupy as little time as possible. These things would conduce to the welfare of the patient. In regard to the complications which arose, the most important thing was the prompt recognition of them. Fatalities from complications occurred because they were not promptly recognized and therefore not promptly treated. A careful study of every postoperative case would enable the experienced clinician to recognize an approaching dilatation of the stomach, and if this condition was quickly recognized, and energetically treated, a great many of the patients would recover—at least fully 30 per cent. The stomach should not be washed out in these cases at stated intervals. As soon as the condition was recognized, prompt lavage should be practised and continued as long as there was any indication of vomiting.

DR. RUFUS B. HALL, of Cincinnati, Ohio, in speaking of abdominal distention, referred to the value of the hypodermic use of eserine in one-fiftieth or one-hundredth grain doses. Within forty minutes after it was administered, the patient began to pass gas. His rule had been to give patients the fiftieth of a grain under the skin, and within forty minutes, if the patient was not relieved by passing great quantities of gas, the dose was repeated. But it was rare, however, that he had to give a second dose. He had used this remedy for about two years in more than thirty cases, and in only one case did it fail to bring on the prompt elimination of the gas.

DR. W. P. CARR, of Washington, D. C., had had good results from eserine in a number of cases, and where the stomachs of patients were washed out directly after operation, and a dose of eserine had been given them when they left the table, there had been very little trouble from distention by gas or in getting the bowels to move afterwards. Washing out the stomach after an operation and giving the thirtieth of a grain of eserine on the

table were very effective as a routine practice, except where the bowels were open and where one did not want to get very much peristalsis. It was only effective when there was something in the bowel. If the bowel was absolutely empty, eserine did not seem to have any effect.

DR. CHARLES H. MAYO, of Rochester, Minn., in speaking of acute dilatation of the stomach, referred to the great amount of discomfort that followed operation in these cases. Many of these patients died. They die because, on the second, the third or fourth day, they showed a marked condition of regurgitation. These patients would lie in bed and vomit a peculiar greenish material in considerable quantities. Sometimes two or three quarts might be vomited. The lower abdomen was flat, while the upper was distended. The condition ran on possibly for four days, when there might be a profuse diarrhea. The condition could be met successfully in many cases by lavage, washing the stomach and keeping it washed as long as it showed a tendency to refill. Many of these cases after three or four washings within the third day would be entirely relieved; intestinal peristalsis would begin, and gas escape. Some of the more severe cases could be saved by a gastrojejunostomy done between the fifth and seventh days as a secondary operation.

DR. HERMAN J. BOLDT, of New York, did not think the mortality from acute dilatation of the stomach was as high as had been quoted. However, it was a comparatively frequent and undesirable complication after abdominal section work. Whenever there was the slightest evidence of an inflammatory process in the peritoneum, salicylate of eserine did no good, so that one must be careful in selecting his cases. Early mobility of patients would guard against some of these postoperative complications.

DR. J. M. MASON, of Birmingham, Ala., mentioned a patient who developed acute dilatation of the stomach the day following an operation, but who was entirely relieved by getting rid of the Fowler position, elevating the foot of the bed, and by resorting to lavage.

DR. HUBERT A. ROYSTER, of Raleigh, N. C., reported a case of acute dilatation of the stomach following an operation for the fixation of both kidneys. The patient died on the fourth day after efforts to relieve her had been made.

DR. JOHN YOUNG BROWN, of St. Louis, Mo., had had twenty-eight cases of diffuse peritonitis, and since he began the treatment recommended by Bond, in a paper read before the British Medical Association, and advocated later by Murphy, his mortality had been greatly reduced. Prior to that time, however, when he irrigated it was high. It is not so much the Fowler position as in getting these patients to move about in bed and preventing the complications that were formerly seen. Of ten cases treated without the Fowler position, the results were as good as in those treated with it. He thought that by following

a simple technic at the primary operation, complications which would otherwise arise might be prevented.

DR. I. S. STONE, of Washington, D. C., thought that after doing good surgical work the patient's bowels should be allowed to rest. When a surgeon gave purgatives immediately after operations, he thought he defeated the very purpose he ought to attempt to accomplish. He had done quite a number of operations, in the last five years and had not had a single case of death from ileus.

DR. EDWARD H. OCHSNER, of Chicago, said the sooner surgeons learned to recognize that rest favored repair, and that motion favored adhesions, the better it would be for the patients.

DR. CHARLES H. MAYO, of Rochester, Minn., read a paper on

TRANSPERITONEAL REMOVAL OF TUMORS OF THE BLADDER.

The author said that the large percentage of early recurrences following the removal of bladder tumors, both benign and malignant, indicated delayed operation or imperfect removal. With the increasing interest in cystoscopy, early operating was becoming more common. The ineffective operation was due, in part, at least, to imperfect exposure of the operative field. The transperitoneal operation was advised in cases of large tumors, benign or malignant, of the bladder. With the patient in the Trendelenburg posture, the bladder empty, a long median incision is made over the bladder, the peritoneum opened, and the intestine walled off into the upper abdomen by large gauze pads in the operative field. The bladder was drawn up into the wound, and opened through the peritoneal covering on its posterior superior aspect. The cavity was now dried with gauze and the incision increased forward or back two or three inches, the tumor excised, and the area involved treated with the Paquelin cautery. In some cases large areas of the bladder, even two-thirds of it, may be resected. The opening was closed by catgut suture protected on its peritoneal side by a linen suture of the Cushing type. The abdominal incision was closed usually without drainage. In the after-care, repeated use of the catheter for a few days, if necessary, was preferred in uncomplicated cases.

TREATMENT OF THE BLADDER AFTER SUPRAPUBIC CYSTOTOMY FOR STONE.

DR. WILLIAM S. GOLDSMITH, of Atlanta, Ga., said the principles governing the treatment of the bladder after suprapubic cystotomy were, (1) the immediate and complete closure of the bladder and abdominal wound; and (2) the institution of urethral retention catheter drainage. A series of external urethrotomy cases, in which the retention catheter method was used, and following the closure of the perineal incision, convinced him of its efficiency and of the tolerance of the bladder for these unusual conditions. Perfect urethral drainage was

such a necessity that failure in securing successful results was attributed to some imperfections of this important factor of treatment. Large stones could not be removed through small incisions without seriously lacerating the mucous membrane and other coats and leaving a ragged, lacerated suture line altogether unsurgical in character, and encouraging tissue necrosis with eventually bad results. Upon the removal of the foreign body, the wound was protected with gauze, the patient turned upon his side, and the bladder thoroughly irrigated with urethral catheter. The wound was closed tight with interrupted silk sutures, introduced down to, but not including the mucous membrane. The abdominal incision was closed with small chromic catgut and cotton, and collodion applied. Elaborate abdominal dressings were not used, for the reason that they served no purpose other than to interfere with the freedom of the patient in turning from side to side. In adults, and particularly in men of middle age, posture was a most important detail. The ability to turn on either side and the insistence of frequent change of position stimulated urinary secretions, prevented puddling of urine, and insured a clean, collapsed cavity, which at once began a regeneration of exhausted anatomical and physiological activity. The semi-erect, and finally the erect, position was rapidly assumed, and every effort was directed along the line of forced recuperation and rapid convalescence.

DR. LEWIS S. MCMURTRY, of Louisville, read a paper entitled

THE TREATMENT OF FIBROID TUMORS OF THE UTERUS
COMPLICATED BY PREGNANCY.

The author alluded to the indications for surgical intervention in cases of fibromyomata complicating pregnancy, with especial reference to the time for such intervention and the plan and scope of the operative procedure in the varying conditions presented. Uterine fibromyomata were very commonly associated with sterility. Veit estimated that 8 to 10 per cent. of married women were sterile, but that quite 30 per cent. of married women with uterine fibroids were sterile. Again, the period of greatest fecundity was before the age of thirty-five years, whereas the period at which uterine fibromyomata most frequently occurred was after thirty-five. Moreover, so great were the conservative powers of the pregnant uterus that small tumors in any part of the uterus very rarely interfered with pregnancy and labor. Comparatively large tumors in the upper part of the uterus only exceptionally necessitated surgical intervention, and moderately large tumors growing from the lower uterine segment and resting within the true pelvis did not invariably prove insuperable obstacles to spontaneous delivery at term.

To illustrate the advantage of prompt operative intervention in properly selected cases, the author reported four cases, as

well as reviewed the literature of the subject. These cases he selected for the purpose of illustrating the multiform aspects of uterine fibromyomata complicated by pregnancy as clinically presented. His entire experience, however, consisted of two more cases, in which operation was done in the early period of pregnancy, making six cases in all, and all recovered. While indiscriminate operation in uterine fibromyomata associated with pregnancy was not to be advised, the mortality of this condition when unaided was so great as to justify an extension of the field of operative treatment, both myomectomy and hysteromyomectomy; and every case should receive individual consideration so that a judicious selection of cases for operation might be made.

DISCUSSION.

DR. GEORGE H. NOBLE, of Atlanta, Ga., said that where the pelvis was impacted completely, such as he had seen in a number of cases, where it was impossible to make a digital examination, and the upper part of the uterus was smooth, free from the tumor, the surgeon might do one of two things—a Cesarean section, or a myomectomy. Since Cesarean section was a simple operation, it would be desirable in the interest of the mother and of the fetus. Myomectomy could be carried much further in well-selected cases.

DR. HERMAN J. BOLDT, of New York, said that a woman in about the third month of gestation consulted him as to whether or not she was pregnant. She had missed the menstrual period a couple of times, and the physician whom she first consulted informed her that she had a tumor which required immediate removal. Examination revealed a tumor in the lower anterior segment of the uterus, a fibromyoma of the interstitial variety; at the same time, she was pregnant. At the time she consulted him he advised noninterference, but that if any serious symptoms were encountered, it might be necessary later to do a Cesarean section in case she could not be delivered naturally. Myomectomy was decided on and done to prevent an abortion. The woman made a perfect recovery. She was now eight months pregnant.

DR. HENRY D. FRY, of Washington, D. C., said that in addition to the dangers mentioned by the essayist, we must recognize the increased danger in these cases from postpartum hemorrhage. The retraction of the uterus was not sufficient at the site of the placental attachment, and postpartum hemorrhage was likely to occur. Again, if the woman passed through labor satisfactorily and safely, we might have infection or necrosis of the fibroids. He had had that occur twice in his own work, where the women had been delivered safely and their puerperium was complicated by septic fever. Supravaginal hysterectomy was done. The woman got well, but in cutting down on

the tumor it was found to be disintegrated and necrotic. As to the time of operation for these fibroid tumors, he thought surgeons ought to tide these cases along until the child reached the period of viability, get as near the full term of gestation as possible, and then do a Cesarean section and supravaginal amputation of the uterus.

DR. ERNEST S. LEWIS, of New Orleans, mentioned the case of a woman, five months pregnant, who had a fibroid attached to the body of the uterus and filling about one-half of the pelvis. It was not suspected until it caused pressure symptoms and pain. Her family physician sent for him, and a fibroid which could not be pushed above the brim of the pelvis was diagnosed. The cervix was pressed against the symphysis pubis. Operation was advised and consented to. The abdomen was opened, the tumor enucleated, from the back portion of the uterus, the abdomen closed, the patient made an uneventful recovery, went to full term, and was delivered by her family physician with forceps. He referred to another case in which the woman was more advanced in pregnancy.

DR. J. WESLEY BOVEE, of Washington, D. C., thought there were a great many women who would go to full term and be delivered naturally with fibroid tumors of the uterus, so that he thought we could not lay down any fast rule that would apply to every case. Each case was to be considered individually. If any operation was to be done, it was well to follow the plan mentioned by Dr. Fry. The speaker was loath, however, to do a myomectomy where the growth was intimately connected with the body of the uterus, and he felt it would be apt to induce abortion. The case of Dr. Boldt impressed him as being unique, from the fact that operation was done to prevent abortion, and abortion did not occur, although it was threatened before operation was done. As a rule, he would expect the opposite to be the case, and he doubted whether surgeons could follow Dr. Boldt's plan as a routine measure. In a number of cases he had done myomectomy without interference with pregnancy.

DR. GEO. BEN JOHNSTON, of Richmond, Va., maintained that when fibroids could be removed early in pregnancy, this should be done. Unfortunately many of the cases did not reach the surgeon until a stage of pregnancy had been reached when this could not be safely done. When a pregnancy was known to exist and was complicated by fibroids, such a patient should be closely watched, so that prompt operation might be performed, if necessary. In this way the rights of the unborn child could be respected, and it was not uncommon for such a pregnancy to go on to the period when the child was viable. He had had experience in fifteen cases on which he had operated for fibroids complicating pregnancy. His experience, however, had been doleful in the matter of saving the children. He had not had a fatality among the mothers, but had been able to save only one child out of these fifteen cases.

PRESIDENT'S ADDRESS.

This was delivered by DR. HOWARD A. KELLY, of Baltimore, Md., who selected for his subject "Art as Applied to Medicine and Surgery." The address was illustrated by numerous works of art from the time of Hippocrates down to the present.

DR. HENRY D. FRY, of Washington, D. C., read a paper on

THE MANAGEMENT OF LABOR IN MINOR DEGREES OF PELVIC
CONTRACTION, WITH SPECIAL REFERENCE TO THE RELATIVE
INDICATIONS FOR ABDOMINAL CESAREAN SECTION.

The author presented a tabulated report of eighteen cases of Cesarean section. After speaking of the absolute and relative indications for Cesarean section, the author said that the importance of early surgical interference was recognized by all operators before the woman had gone through the exhaustion of a prolonged labor, and particularly before employing forceps and manipulations that might produce infection.

The maternal mortality of elective Cesarean section was 1.2 per cent.; of early interference, 4 per cent., and late, 12 per cent.

It was estimated that one white woman in every fourteen, and one colored woman in every six had a contracted pelvis. By far the most common types of deformity were the generally contracted and the single flat pelvis. The relative frequency of these two types depended largely upon the class of women among whom one worked. Obstetricians living in the southern states of this country, where there was a large negro population, found the generally contracted pelvis largely in preponderance.

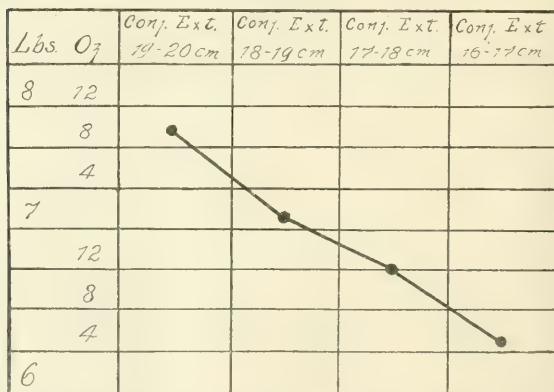
An external conjugate of nineteen, eighteen, seventeen, or sixteen centimeters was found and yet many of the women were delivered after a normal labor. One of two conditions existed:

First. The external conjugate was diminished, but the internal was normal. This was due to thinness of the sacrum and was found in women who possessed small structural development of the skeleton.

Second. There was some diminution of the obstetrical conjugate, or of all the internal pelvic diameters, but nature took care of these cases by giving a small baby to pass through a small pelvis. The product of conception was small and the pelvis was small because of nondevelopment of infant and mother. The relation between the diminished weight of the infant and the degrees of shortening of the external conjugate diameters of the mother's pelvis was shown by the accompanying diagram and was based upon the average of 272 observations.

On the other hand, it was claimed that contraction of the internal conjugate was rarely found to exist when the external measures 20 cm. or more. In Case 18 of the series of Cesarean sections reported in this paper the external conjugate measured 20.5 cm. The other external diameters were also normal or

above normal, and yet the woman had a contracted pelvis with a true conjugate of 9 cm. ($3\frac{3}{8}$ in.). Another case recently came under his observation with an external conjugate of 20 cm., and the woman had a true conjugate of only 7.5 cm. (3 in.). The only external measurements to excite suspicion were the right and left obliques, which were two to three centimeters short. At the first labor he effected delivery by symphysiotomy. One year later she entered Columbia Hospital at the seventh month of pregnancy in premature labor. The waters had escaped and the legs of the infant were in the vagina. Although a small premature infant, it was delivered dead by traction aided by strong suprapubic pressure. The importance of measuring the two external obliques was not generally recognized. At the San



Francisco Maternity the classification of pelvis is based upon the length of these external diameters and the true conjugate. Another case illustrating the importance of the lengths of the external obliques was examined within the past few days. The woman had been delivered by difficult high forceps extractions twice, with both babies large and dead. She was five months pregnant with her third gestation when he examined her with her physician, Dr. D'Arcy Magee. All of the pelvic diameters were normal (including the diagonal conjugate), except the external obliques—the right was 20 cm., and the left, 19 cm. The internal obliques were clearly diminished by the encroachment of the iliac planes within the pelvic space.

Pelvimetry should be performed at the eighth month in all primiparæ and in those multiparæ who have passed through difficult labors. If neglected until the onset of labor, it should be done then in all cases where the head was high, and especially

before any attempts were made to deliver by forceps. Shortening or disproportion of any of the pelvic diameters should always excite suspicion.

In minor degrees of pelvic contraction the length of pelvic diameters *alone* was not all-important; the size of the infant's head *alone* was not all-important. It was the relative disproportion between the head and the pelvis. Could *this* head mold and pass through *this* pelvis, was the question to decide. The answer must be sought by the result of palpation. If the head be not engaged, could it be made to do so by pressure in the line of axis of the superior strait?

In minor degrees of pelvic contraction discovered in the thirty-second week of pregnancy modern obstetric practice pointed out three lines of treatment.

First. The induction of premature labor.

Second. Elective Cesarean section.

Third. Delay until labor has demonstrated the resources of nature, then,

a. Spontaneous delivery.

b. Version.

c. Axis traction forceps.

d. Cesarean section.

e. Symphysiotomy or pubiotomy.

f. Craniotomy.

First.—The induction of premature labor: There was a slight increase of danger to the mother, and a very material risk to the infant by this method. The earlier interference was required, the greater the risk to the infant; therefore the indications for inducing labor were not justified before the completion of the thirty-sixth week of pregnancy unless the mother had previously given birth to very big babies. Beginning at the thirty-second week, the case should be tested weekly to see that the head could be pressed down into the inlet. If it could be carried on in this way to the thirty-sixth or thirty-seventh week, labor might be induced. If engagement could not be made successful before that time it was not, as a rule, a proper case for the induction of labor.

Whether labor had been induced or was spontaneous, the case should be conducted along such lines that the patient would be in a favorable condition for Cesarean section should it prove advisable. Few examinations should be made, and these with the most rigid aseptic precautions. In case molding and engagement had occurred, the conditions gave promise of a successful forceps delivery, the woman should be placed in the Walcher position and the instruments employed. If failure resulted, and the efforts at artificial delivery had not been protracted, and if the woman be in good condition, abdominal section may still be advisable. If, on the other hand, the woman should show signs of exhaustion, and if the efforts at forceps delivery had been prolonged, the course of action must be

guided by the condition of the infant. If its life had been seriously jeopardized, or if destroyed, craniotomy would be indicated. If the heart sounds of the infant be good and there was hope of saving it, a symphysiotomy or pubiotomy would be called for.

Second.—Elective Cesarean section: When the disproportion between the diameters of the fetal head and the mother's pelvis was decided and the head could not be forced into the inlet by pressure under chloroform, a chance of a successful delivery by the natural passages was so small that Cesarean section should be performed at a period shortly anticipating full term. The best results of the operation were obtained in these cases. If the os be patulous, no trouble would be met with from deficient drainage; if not, it may be dilated from above downwards and a gauze drain inserted. Others might prefer, under the latter circumstances, to wait long enough for labor pains to effect some dilatation.

Third.—Delay until labor had demonstrated the resources of nature: This course would be pursued when the disproportion was not great, and there was good ground to hope for delivery by the natural passages.

a. In the most favorable cases spontaneous delivery would take place. In minor degrees of pelvic contraction it had occurred in two-thirds of the cases. Molding, engagement, and descent of the head with good labor pains held out promise of success.

b. and *c.* If failure resulted, version and axis-traction were held in reserve. Interference by either of these methods should not be attempted unless there was every reason to expect a successful issue. Failure jeopardized the chances of a subsequent abdominal section. In deciding between version and high forceps the choice would be guided by the experience of the individual operator. Version was contraindicated in the justo-minor pelvis as a rule. Some obstetricians performed version if the head be movable above the inlet, and high forceps operation if engaged. Personally, the author believed it was obsolete practice to perform version or high forceps in any case where a test of labor pains failed to engage the head and if it could not be forced through the brim with the patient under chloroform. This statement would be challenged by some obstetricians whose opinions were colored by the teachings of the Dublin and Edinburgh schools.

d. The indications for delivery by Cesarean section should cover cases of minor degrees of pelvic contraction where a few hours of labor pains demonstrated the inability of nature to mold and engage the head. This indication should be extended to embrace those borderline cases in which the conjugate-vera was even as much or more than 8.5 cm. for the justo-minor, and 9 cm. for the simple contracted pelvis. Inability to force the head through the inlet under chloroform should be recognized as a justification for the operation, regardless of the degree of contraction.

Case 18 of the series reported had unusually good external pelvic measurements and a true conjugate of 9 cm. ($3\frac{3}{8}$ in.). The first infant was smaller than the subsequent ones and was delivered by a difficult high forceps operation. It survived with bad head injuries. The second and third babies were large and delivered dead by forceps. The fourth was terminated by Cesarean section and mother and baby left the hospital in good condition at the end of three weeks. The infant weighed $9\frac{3}{4}$ lbs. At the woman's request to be made sterile her tubes were cut and the ends turned in between the folds of the broad ligaments. High forceps extraction would have sacrificed the infant's life and been as dangerous to the mother as the section. Labor might have been terminated by version with little risk to the mother, but much danger to the infant—a biparietal diameter of 9.75 cm. with a well-ossified head, would have had to pass through a conjugate diameter of 9 cm. Symphysiotomy or pubiotomy would most likely have saved both mother and infant, but the tedious convalescence to be anticipated was a deterrent. Also, delivery by any of those methods—forceps, version, symphysiotomy or pubiotomy—would have left the woman exposed to the risks of subsequent pregnancies and labors.

c. The indications for symphysiotomy or pubiotomy: The objections to these methods of delivery were the tedious and painful after-treatment and retarded convalescence. Complications met with afterwards were tearing of the anterior vaginal wall, edema or hematoma of the vulva, foul smelling discharges, fever and septic phlebitis. Symphysiotomy and pubiotomy would, however, remain useful expedients when one was forced to resort to one or the other in preference to craniotomy upon a living child. When the woman had been exhausted by prolonged labor, by manipulations, by the use of forceps, and when the parts were contused and lacerated, and the woman was probably infected, nothing else remained to be done.

An indication for selecting symphysiotomy or pubiotomy might also be recognized when the facilities were not at hand for performing Cesarean section.

f. Craniotomy: The indications recognized for performing craniotomy were after prolonged labor, or failure of version or forceps, and the infant was dead or dying. The diminution of the true conjugate must not be below the limits of an absolute indication for Cesarean section.

Of the eighteen operations reported in tabular form, ten were colored women, and eight white. The eighteen sections were performed within a period of eighteen years. Two were done within the first thirteen years of that period, and sixteen in the last five years. The larger number of operations in the latter period was accounted for by the fact that the relative indications for performing Cesarean section had gradually been broadened to embrace those cases which were formerly submitted to high forceps and version.

The results had shown no increase of danger to the mother and they had recovered without sepsis and laceration of the birth canal. In regard to the infants, this difference was noticed: Living babies were now carried away by the mothers, and not dead babies by the undertaker. Of the eighteen infants, sixteen were viable, and fifteen lived. Three of the cases with pelvic deformity (9, 15, 18) had previously given birth to six infants—one alive and five dead. The dead babies had been delivered by difficult high forceps operations. High forceps extraction in these cases at Columbia Hospital had produced seven dead infants in the last twenty operations, a fetal mortality of nearly 33 per cent.

The only viable baby lost was in Case 4. It weighed 5 lbs. 13 oz. The other two dead infants were one (Case 7) at the seventh month, weighing 3 lbs., removed by Cesarean section for a fibroid blocking the pelvis; and one (Case 8) removed at six and a half months of pregnancy for a placenta prævia centralis.

Thirteen of the women were primiparæ; five had previously given birth to children. Three had already been mentioned; two had each had two babies normally because there was no pelvic deformity. They were Cases 3 and 7, who were operated upon for the result of a previous ventro-fixation, and for fibroid in the pelvis.

The indications for Cesarean section were absolute in eight cases.

Of the fifteen cases of pelvic deformity, the following classification was made:

Justo-minor and flat, generally contracted, pelvis,.....	9
Rachitic flat pelvis,.....	3
Simple flat pelvis,.....	2
Funnel-shaped pelvis,.....	1

The fatal maternal case was in a primiparæ with a funnel-shaped pelvis. She had been in labor thirty-six hours and forceps had been applied four times. Her preference was for a symphysiotomy but the family requested Cesarean section. The woman was the wife of a naval officer and it was desired to make her sterile as subsequent pregnancies might occur at some point removed from skilled assistance. Death occurred on the third day from acute dilatation of the stomach.

The symptoms appeared soon after the patient was removed from the operating table. The pulse ran up to 130 and the temperature to 101 the same evening. The next morning the abdomen was distended. Insertion of a rectal tube and high enemata gave no result. On the second day the bowels moved freely from hypodermatic injections of eserine salicylate. There was little vomiting; some gas escaped by eructation. Calomel was given in small repeated doses and food and stimulants were retained. On the third day the distention increased and the

pulse became more rapid and feeble. Death occurred, and autopsy revealed the peritoneum clean and free from infection and the uterine incision healed. The intestines were empty up to within a few inches of the stomach, where the duodenum was found kinked or twisted longitudinally upon itself. The stomach was enormously distended. The use of a stomach tube and postural treatment would most likely have saved the patient. The true condition was not recognized at the time.

Case 15 of the series tabulated presented postoperative symptoms of a similar character, but was promptly relieved by washing out the stomach.

DR. STUART MCGUIRE, of Richmond, Va., followed with a paper on

TREATMENT OF DIFFUSE SUPPURATIVE PERITONITIS.

He reviewed the work of Muscatello, Clark, Fowler, Bond, Cannon and Murphy, and stated that the present generally accepted method of treatment had not been adopted empirically, but was the result of deductions from scientific observations. A recent analysis of the last 500 cases of appendicitis operated on in his private hospital gave a record of twenty-four patients with diffuse suppurative peritonitis. The first six were treated by the old method of irrigation and multiple drainage, with five deaths; the last eighteen were treated by the so-called Fowler-Murphy method, with but one death. The difficulty he had experienced in carrying out the treatment was in maintaining the patient in an exaggerated Fowler position. He found by visiting other hospitals that two principles were in practice, angulation of the patient, and angulation of the bed. The first was effected by keeping the bed horizontal and elevating the body of the patient by means of a shoulder-rest; the second by elevating the head of the bed and allowing the patient to lie flat on the inclined mattress. The advantage claimed for the semi-sitting position over bed elevation was that it gave better drainage, but this he did not believe to be true, as it was impossible to maintain the patient in the proper position on a shoulder-rest, while it was an easy matter to prevent his slipping on an inclined mattress. The disadvantages of the semi-sitting position were that it made it difficult for the nurse to handle the case, that it was attended by muscular tension and fatigue, and that the patient would slip down so that his body would bend at the costal arch and his abdomen would be on a plane parallel with the surface of the bed. The advantages of elevating the head of the bed were that the mattress might be put at any angle, that the patient lay on the flat surface, often unconscious of his position, and that he was completely relaxed and easily nursed.

Dr. McGuire exhibited a model and photographs of an apparatus which he had employed for more than a year to elevate the

head of the bed and to prevent the patient sliding down the incline. The bed elevator consisted of a wooden base and upright piece, with notches on its side. An iron link supported a block which received the leg of the bed. When horizontal, it would slip up or down, but when oblique would catch in one of the notches. The bed-seat consisted of a board which made a shelf on which the patient sat. A wooden shaft projected downward and passed through a second board, which rested against the foot-piece of the bed. In the shaft were a number of holes and a peg placed in one of them would prevent the shaft passing through the bottom board, thus transferring the weight of the patient to the foot of the bed.

THE VALUE OF INTESTINAL EXCLUSION AS A SURGICAL PROCEDURE.

DR. JOHN YOUNG BROWN, of St. Louis, after discussing the various surgical methods in common use for the restoration of intestinal continuity following artificial anus done for the relief of gangrenous hernia, reported three interesting cases, in which intestinal exclusion of the afferent and efferent bowel was made, followed by end-to-end anastomosis.

The first case was one of strangulated, umbilical hernia in which the cecum, appendix, ascending and transverse colon were found gangrenous in the sac. At the primary operation an artificial anus was made at the umbilical ring. Ten weeks after this operation, the abdomen was opened through a median incision, and bilateral exclusion of the ileum and descending colon was done, followed by direct anastomosis of ileum to sigmoid, anastomosis being made with the Murphy button. The patient made an excellent recovery, and the prolapsed bowel, which remained after intestinal continuity had been restored, was removed later under cocaine anesthesia by clamp and cautery.

The second case was one in which artificial anus was made for a gangrenous, inguinal hernia of the right side, the anus being made at the hernial site. In this case, a similar procedure was undertaken. The abdomen was opened through the right rectum, the afferent and efferent loop of ileum excluded, and end-to-end anastomosis made with a button. The result was exceedingly satisfactory.

The third case was one in which typhlotomy was done through a gridiron incision, and at the same time the entire large bowel was excluded except the cecum. The operation was performed after faithful and unsuccessful efforts had been made to relieve an aggravated case of multiple fistulæ and ischio-rectal sinuses, with necrosis of the coccyx. It was deemed advisable to turn the fecal current, and this method was resorted to. The turning of the fecal current resulted in healing of the old sinuses. The intestinal continuity was later restored by an exclusion of cecum, and a lateral anastomosis of the ileum to the ascending colon,

the last operation being done through an abdominal incision through the right rectus muscle.

In each of the cases reported the various steps of the operation were carried out without difficulty, and the results were all that could be wished.

Attention was called to the fact that in cases where artificial anus was made for the relief of gangrenous hernia, the irritation brought about by the constant fecal leakage produced a dense contraction of the scar, which resulted in complete relief of the hernia. By opening the abdomen through an incision away from the original wound, the bowel could be excluded and end-to-end anastomosis performed with perfect ease, and without impairing the repair work done by nature in relieving the hernia.

The paper concluded with a strong plea for the employment of intestinal exclusion in the treatment of this condition, the writer believing the operation to be safe, surgical and satisfactory.

HEMATURIA IN PREGNANCY.

DR. EDWARD A. BALLOCH, of Washington, D. C., surveyed the literature of so-called idiopathic or essential hematuria, or hematuria without demonstrable cause. He showed that most of these cases were in the older literature, and that modern research tended toward skepticism as to the possibility of renal hematuria without some lesion in the kidney. The two principal theories of causation, the angioneurotic and the chronic nephritis theory, were discussed, and the conclusion arrived at that the latter had the weight of evidence in its favor.

The writer's case was that of a woman of thirty-one, married at twenty, and a 7-para, with a history of almost continuous pregnancies. Blood appeared in the urine during the fifth pregnancy, the hematuria ceasing when the child was born. It skipped the sixth pregnancy, but appeared during the seventh. It did not cease with the birth of this child in March, 1906, but persisted until she came under the writer's observation in October, 1906. She was anemic from the continuous loss of blood, which cystoscopy showed to be from the left kidney. All medical means had been tried without avail. Nephrectomy was advised and accepted, followed by good recovery. After her return home, after operation, she immediately became pregnant. Hematuria was present, but disappeared with the birth of the child. The pathological changes in the kidney were those of glomerular nephritis, with interstitial changes. Accepting the hematuria as a symptom of chronic nephritis, the cause of the latter was discussed and considered to be mainly an auto-toxemia from perverted metabolism, of maternal or fetal origin, or both.

The influence of a nephrectomy upon subsequent pregnancy was discussed. As this is the second instance in the writer's experience where an uneventful pregnancy has followed a

nephrectomy, he does not consider that the loss of one kidney has much effect upon subsequent pregnancy.

The cystoscope and ureteral catheter are essential to proper diagnosis. The existence and functional capacity of a second kidney should be demonstrated before operative measures were practised. In the matter of treatment, the author considered that analysis of reported cases showed that equally good results had followed decapsulation and nephrotomy as had followed nephrectomy. He advised the following order of procedure: (1) Injection of adrenalin solution into the pelvis of the kidney; (2) nephrotomy or decapsulation; (3) nephrectomy.

Nephrectomy should be resorted to only in cases intractable to other measures, as it is essential to save as much of the kidney structure as possible.

THE SENSITIVE SHORT UTERO-SACRAL LIGAMENT; ITS CLINICAL SIGNIFICANCE AND TREATMENT.

DR. EDWARD J. ILL, of Newark, N. J., drew attention to the sensitive short utero-sacral ligament as a pathological entity. Schultz and Burrage wrote of the condition long before this. Schultz gave no special advice as to treatment, while Burrage recommended incision of the ligament through an abdominal section. Ovaries had been sacrificed under false apprehension. The condition should not be confounded with intraperitoneal adhesions, nor with shortening of the base of the broad ligament, due to scars resulting from puerperal injuries. Outside of the acute pelvic exudate, the writer knew of no condition so painful on pressure as the short and sensitive utero-sacral ligament. During the last twelve years 5 per cent. of all his operative gynecological cases suffered with a short and sensitive utero-sacral ligament. When but one ligament was diseased, it occurred in 73 per cent. on the left side. The disease might be congenital, or acquired either in childhood or during active sexual life. Because of the short ligament a fixation of the uterus resulted. The circulation of the organ became impaired. Catarrhal and metritic changes resulted in menstrual disturbances. In the acquired case, when but one ligament was short and sensitive, the pain was commonly referred to the sacro-iliac synchondrosis or the iliac region of that short side. Menstrual pain seemed to be common to all, and was produced by metritic and endometritic changes. The neurasthenic cases offered a bad prognosis. Sterility was a frequent symptom, and abortion sometimes resulted from a very short ligament. The objective symptoms, when both ligaments were shortened, were to elevate the uterus and drag it into the hollow of the sacrum. Its mobility was much impaired. When one ligament was short, the uterus was elevated and displaced to the side of the short ligament and retroposed. The short ligament stood out sharply when the cervix was drawn forward and downward.

Great pain resulted from such procedure. The prognosis was bad for those who came from a neurotic family, or where from long-standing conditions the resulting pathological changes had become incurable. The operation suggested by the writer consisted of a most thorough stretching of the tense and sensitive utero-sacral ligaments, while the patient was under profound anesthesia, until the uterus became freely movable. A free dilatation of the uterus with graduated steel sounds, curettage, etc., should be added.

CYST OF THE PANCREAS.

DR. RUFUS B. HALL, of Cincinnati, said that true cysts of the pancreas were retroperitoneal tumors, while pseudocysts were intraperitoneal accumulations of fluid. Judging from the literature, the tail of the pancreas was the favorite anatomical location for the development of these cysts. The diagnosis of pancreatic cysts should be based upon the character of the contents of the tumor rather than upon the supposed demonstration of anatomical connection.

The author reported a case of cyst of the pancreas in a woman, forty-two years of age, upon whom he operated successfully.

TRANSPERITONEAL URETEROTOMY FOR URETERAL CALCULUS.

DR. GERRY R. HOLDEN, of Jacksonville, Fla., reported a case in which he resorted to this operation for the removal of a stone in the ureter. He pointed out the reasons why an abdominal extraperitoneal operation was impossible on account of the thick abdominal walls. He did not believe that transperitoneal ureterotomy for ureteral calculus was often the operation of election. He did believe, however, that it was the best operation when the stone was impacted at or just above the uterine artery, provided one was reasonably assured that infection was either mild or else absent altogether.

THE INCONSISTENCIES OF THE GAUZE PACK.

DR. HUBERT A. ROYSTER, of Raleigh, N. C., said we drained before we knew why we drained. A strip of gauze was simply a means of applying the law of capillary attraction. Rubber tube and tissue had been substituted, because the gauze so frequently failed to drain, acting as a successful stopper to the outlet. The one thing to be desired was patency of the wound, but there could be no more efficient plug than the stereotyped gauze packing. When intended for a drain, gauze should be inserted after the manner of a lamp-wick; when used for hemorrhage, it should be packed in like wadding with a ramrod. There was a field for gauze in packing sinuses, fistulæ and granu-

lating wounds, so that healing might take place slowly from the bottom. Some will persist in using gauze drains and in the event of disaster will console themselves by believing that it was better to have drained and lost than never to have drained at all. The use of gauze to wall off septic matter in abdominal operations was fraught with danger and full of inconsistencies. The placing of large pads or rolls of gauze in the cavity necessitated a long incision, undue handling of the viscera, and almost always uninfected regions were in contact with pus-soaked gauze. When one end of the gauze was soaked with pus, the other end would become soiled sooner or later. The common practice was to push the gauze packs through pus collections into healthy parts or to wall off around localized abscesses with pads which soon became saturated with purulent products. Exposure of the peritoneum to gauze soaked with pus was just as dangerous as the presence of pus itself among the intestines. A glaring inconsistency was seen in the removal of the packs with contaminated hands. The surgeon should resolve, first, that he would employ gauze sensibly, if he could, and not at all, if he could not. Second, that if the using of gauze "maketh our technic to offend, we will use no more gauze while the world standeth."

(To be Concluded.)

REVIEWS.

DISEASES OF CHILDREN FOR NURSES. Including Infant Feeding, Therapeutic Measures Employed in Childhood, Treatment for Emergencies, Prophylaxis, Hygiene, and Nursing. By ROBERT S. McCOMBS, M. D., Assistant Physician to the Dispensary and Instructor of Nurses at the Children's Hospital of Philadelphia. 431 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1907.

On account of the intrinsic value of this little volume for the purpose for which it is written we have read the book with considerable care, and call attention to certain errors and defects which detract from its usefulness. We do this because, with suitable revision, the work can be made most valuable to nurses. There is at times too much implied authority delegated to the nurse. For example the writer says: "If pills or powders are ordered it is best to dissolve them." If the physician desires his drugs given in solution he may be expected to so direct, and the nurse who follows the writer's advice might find some difficulty in giving insoluble drugs such as salol. It is hard to appreciate the author's object in devoting a number of pages to the discussion of physical signs of the heart including cardiac murmurs. If anything is out of the nurse's province it is cer-

tainly the differentiation of cardiac murmurs. We note also an occasional inaccuracy, such as the statement that epithelial casts degenerate and form hyaline casts. Under cerebrospinal fever the writer states that "pressure of exudate upon the cranial and spinal nerves may produce either paralysis or hypersensitiveness according to the nerves involved." Such a description would certainly fail to convey the idea that the results of pressure may be first stimulation and then paralysis of any nerve affected. Under malarial fever we find the following reminder of the Dark Ages: "During the night and in the early morning the air is thoroughly impregnated with the miasm and exposure at such times is very apt to be followed by infection." Of acute articular rheumatism it is said that "the more generally accepted theory is that it is due to the accumulation of uric acid in the system." Hemophilia is spoken of as usually running "in families, several brothers and sisters being affected." The author appears to overlook the usual immunity of the female. All forms of purpura are apparently included under the denomination *purpura hæmorrhagica*, which the writer defines as a condition "produced by extravasations of blood in the skin and bleeding from mucous membranes." He seems to regard the symptom as an etiological factor. Infant feeding is satisfactorily treated. Artificial feeding is largely quoted from Holt. The chapter on therapeutics is especially well written. It contains useful notes on drugs. A number of the Latin names of these require revision, chiefly grammatical. Of the "nonofficial remedies" given nearly all are now official under other names. The remarks on treatment of emergencies and therapeutic measures are particularly good. The cut of syringing the eye, however, shows the head turned so that the eye being irrigated is at a higher level than the unaffected eye, not the position of safety as regards the latter. We trust that the writer will see his way clear to an early revision of a work which is worthy of the effort.

H. D.

A REFERENCE HANDBOOK OF OBSTETRIC NURSING. By W. REYNOLDS WILSON, M. D., Visiting Physician to the Philadelphia Lying-in Charity; Member of the American Pediatric Society. 32mo of 258 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1907.

This little volume, in the publishers' well-known and attractive flexible leather dress, is admirably fitted for the use of nurses. Its contents are well selected, giving the nurse an intelligent idea of the reasons for her work without further elaboration than is necessary in treating of conditions the entire care of which may be thrown upon her in an emergency. Although it describes the care of the pregnant and parturient woman fully enough to enable the nurse to meet such emergencies, it does not trespass upon the field of the physician more than necessary. Every page emphasizes the nurse's relation to the case. It may be recommended to her as a reliable guide.

H. D.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Cancer of the Cervix and Pregnancy.—Grimoud (*Gaz. des Hôp.*, Sept. 14, 1907) states that pregnancy aggravates the disease when cancer of the cervix is present, especially in young women, and the progress of the disease becomes very rapid. Its malignancy is in inverse proportion to the vitality of the tissues invaded. The symptoms are more marked than in other cancers of the womb. The pain is at once increased by pregnancy, irradiating in all directions and being very acute. Hemorrhages occur early in the course of the disease, and are of increased amount, endangering the lives of mother and child. Leucorrhea is not a marked sign. Abortions are frequent at about the third month, and premature labors at the seventh month. The nearer the cancer is to the os the more frequent are abortions. The mortality of the child is increased. Labor influences unfavorably the growth of the cancer on account of the friction and pressure of the fetus on the growth; because of the danger of infection; and owing to the obstruction presented by the cancer to delivery, thus increasing danger of hemorrhage, gangrene, fissures, rupture of the uterus, and violent hemorrhage. Labor is generally natural when term is reached, although in some cases there is obstruction to delivery by the growth, and labor is thus prolonged. Uterine inertia is frequent and the organ dilates slowly, having lost its elasticity. About 50 per cent. of the children are born dead. The puerperal condition is most unfavorable on account of the dangers of infection and of hemorrhage. The disease is early propagated to the parametrium, broad ligaments, bladder and rectum. When recognized early in pregnancy and the growth is not extensive, operation is demanded, the entire pelvic contents being removed.

Treatment of Retrodisplacement during Pregnancy.—Channing W. Barrett (*Lancet Clinic*, Aug. 3, 1907) looks upon retroversio-flexion as a pathological condition and worthy of appropriate treatment, operative or nonoperative. Pregnancy may be the means of a cure, but may on the other hand seriously complicate the condition. A retrodisplaced pregnant uterus should be replaced as soon as possible and, if necessary, held in place by means of a pessary. A displacement during the early weeks of pregnancy that cannot immediately be replaced should be supervised and efforts should be made to assist its return to normal position as growth advances. An irreducible retrodisplacement that shows beginning signs of intolerance or

incarceration should have a radical operation to cure the displacement rather than be emptied or punctured. Should a retrodisplacement correct itself, or be corrected during pregnancy without operation, it should be carefully supervised after confinement with a view of permanently correcting the malposition.

Urine of Pregnancy.—J. Clifton Edgar (*N. Y. Med. Jour.*, Aug. 10, 1907) has found that low urea percentages fail to give reliable evidence of kidney failure or faulty metabolism. The presence of albumin in the urine especially where accompanied by casts is of more importance than in the nonpregnant state. The albumin may be the only diagnostic sign of the presence of a defective kidney condition, a chronic or an incipient nephritis, a danger signal that the preeclamptic state is already present or that eclampsia itself is already imminent. Albumin and casts in the urine appear to be the result of a pregnancy toxemia as indicated by a faulty urinary excretion of nitrogen. The nephritic condition appears to be the result and not the cause of the toxemia. In toxemic vomiting of pregnancy albumin and casts do not usually appear until the terminal stages of the disease and then without any accompanying edema. Large quantities of indican may result in nephritic changes and the appearance of albumin and casts. In other words the nephritic condition may be the result and not the cause of intestinal intoxication. Another sign in the urine of diagnostic value is the relation of the nitrogen of the nitrogenous compounds of the urine to the total nitrogen. The persistent vomiting of pregnancy is with few exceptions toxemic in character, as shown by faulty urinary excretion of nitrogen. We can usually distinguish between two varieties of pre-eclamptic states, the first largely toxemic (hepatic, peculiar to pregnancy) in character and the second nephritic. In the first variety albumin and casts and a diminished amount of urine are not prominent symptoms, but the proportion of ammonia nitrogen and undetermined nitrogen is high and that of urea nitrogen is low. In the second variety there is an increasing amount of albumin and casts in the urine, with a diminution in the amount of urine. There is little change in the urinary nitrogen. This latter variety more readily yields to treatment and gives a better prognosis.

Method of Infection of the Amniotic Fluid. Passage of the Bacteria and their Toxins through the Membranes.—G. Raineri (*Gyn. Rund.*, Bd. 1, H. 23) questions whether the bacteria in cases of infected amniotic fluid can enter through the unbroken membranes. The amniotic fluid has bactericidal properties against some germs such as streptococcus and staphylococcus pyogenes, and restraining influences against others. The infecting bacteria can be brought by means of the finger or instruments and introduced through an unseen rent in the membranes. There are certainly some cases of self-infection. Predisposing

causes are slow labor, abnormal position, prolapsus of the vaginal walls, etc. The author's experiments show that the amnion is more permeable than the chorion, and a separation of the layers of the membranes would favor infection.

Use of Adrenalin in Osteomalacia.—Ernst Puppel (*Zent. f. Gyn.*, Dec. 7, 1907) describes two cases of osteomalacia in which he made use of adrenal extract to endeavor to cure the condition. One of these cases was confined to bed, the other could not move from her chair. The author began treatment with a solution of 1:5000, and made an injection twice weekly. One patient was a young woman who had been once pregnant and had begun her second pregnancy very soon after the delivery of the first child. Her circumstances were so poor that it was impossible to obtain super-feeding. She was obliged to lie in bed from the third month of pregnancy. Phosphorus and salt baths had no effect on her disease. There were no serious pelvic contractions and the labor was normal. The ovaries were removed. The patient was entirely cured and has remained well for three years. The second patient was an older woman and pelvic deformity was so marked that after three days' labor she was delivered by Cesarean section. Two years after the operation she is well. The author believes that when we see the patient before deformity has occurred, and during the pregnancy, we should endeavor to obtain a normal labor without sacrificing the ovaries, and yet obtain a cure. Adrenalin is contraindicated in heart and lung difficulties.

Dangers and Management of Placenta Prævia.—Zweifel (*Munch. Med. Woch.*, Nov. 26, 1907) advises, as soon as a severe loss of blood has occurred during pregnancy, that measures be taken to protect the woman against a renewal of the hemorrhage. The patient should be kept tamponed for at least a week if labor does not come on. A rubber balloon is not feasible for so long a tamponade. Materials must be used that are sterile. Aseptic gauze is the best material for this purpose, but if that is not at hand gauze or wadding may be boiled in water to which has been added a tablespoonful of vinegar, which will make it styptic as well as aseptic. The rupture of the membranes is the best method of bringing on labor when this is possible, which is not always the case. The best means of stopping hemorrhage is a rapid version with dilated cervix. Extraction should not be at once carried out unless the cervix is dilated, on account of the danger of rupture of the cervix. Delay increases danger to the child and when a rupture of the cervix is not to be feared the child should be at once brought down. In central placenta prævia we must attempt to bore through the placenta so as to perform version.

Experimental Studies of Permanent Widening of the Pelvis after Hebosteotomy.—G. Raineri (*Zent. f. Gyn.*, Nov. 9, 1907) has experimented on animals by placing between the segments of the sawed pelvic bones pieces of decalcified bone cartilage

and fresh bone. Out of sixteen dogs operated on in this way in nine the radiographic picture could be taken one month after the operation. The bones were also examined after killing the dogs. The results were that with bone and decalcified bone there was slight necrosis at the point of contact, or the foreign body was surrounded by pus. In some cases the foreign body was enclosed in connective tissue. The union of the bones was fibrous. The author believes that this method of increasing pelvic enlargement in women is absolutely impracticable.

Instrumental Perforation of the Uterus During Abortion.—E. G. Orthmann (*Berl. Klin. Woch.*, Dec. 2, 1907) describes three cases of perforation of the uterus with injuries of the intestines which he has observed after abortion. Of these he gives the histories. In one there was only a slight lesion of the intestine and a tearing of the mesentery by the abortion forceps of Winter. Twenty hours later a celiotomy was done and the intestine closed. The uterus and left tube were resected. Six years later the patient underwent a normal pregnancy with delivery by version, premature labor having been induced four weeks before term on account of a contracted pelvis. In the second case the intestine was adherent to the uterine fundus. The intestine was torn for a distance of six or seven centimeters. A resection of the intestine and an amputation of the fundus was done and the patient recovered. In the third case the tear was made by a dull curette and the uterus was severely torn as well as the intestine. Resection of the intestine and total extirpation of the uterus were necessary. The patient died of peritonitis four days later. The author gives the causes of these perforations thus: Pathological condition of the uterus due to inflammatory lesions, in some of which the uterus becomes as soft as butter, the use of improper or dangerous instruments, failures in technic in the removal of the ovum and its envelopes. This comes from the practice of young inexperienced men attending patients in abortion when they have never seen an abortion properly treated. Even when the uterus has been perforated, if the instruments were aseptic and the repair is immediate the condition is not dangerous. All sharp and small pointed instruments should be discarded in treating a patient during abortion. The canal should be dilated before instruments are used. The fingers are the least dangerous instruments when used in such cases. When an instrument must be used, as sometimes happens, the best is a wide, blunt spoon for separating the membranes. A careful examination of the uterus should be made before any operation is undertaken. The position of the fundus should be ascertained by the use of the sound. The abortion forceps should be used only to remove loose portions of membranes. Dilatation of the cervix should be done after the third month of pregnancy.

Appendicitis Complicating the Puerperium.—David C. Hilton (*Surg. Gyn. and Obst.*, Oct., 1907) finds that while the symp-

toms and signs of appendicitis occurring at this time are the same as at other times, they may easily be mistaken for those of an ordinary postpartum condition. When septic infection of the uterus or of the right adnexa is present, especially if it involves the peritoneum, an early diagnosis of appendicitis may be impossible. It should be borne in mind that women who have had appendicitis are subject to recurrences during the puerperium. Of twenty-two cases reported in the literature on this subject as developing within ten days after labor there was a mortality of 45.5 per cent. In these cases nearly 70 per cent. were of suppurative or of a perforating type. Early surgical interference is the rational treatment. The writer reports a case of this variety seen by him at about the tenth week, in which the symptoms of appendicitis were marked by the course of the puerperium. At the time of the operation about two quarts of pus were found around the perforated appendix. The patient died at the end of a three months' illness.

GYNECOLOGY AND ABDOMINAL SURGERY.

Retroversion and its Treatment.—W. P. Graves (*Boston Med. and Surg. Jour.*, July 4, 1907) advises Alexander's operation when the uterus can be easily replaced and there is no necessity of inspecting the abdominal cavity. Where it is desirable to open the abdomen and no marked relaxation or excessive adhesions exist, Mayo's internal Alexander is the operation of choice. In cases of many adhesions and marked retroflexion, or with much sagging of the diaphragmatic support, the uterus should be attached to the abdominal wall in a manner so that it will stay. Attachment of the uterus to the abdominal wall by a suture merely through the peritoneum is an inefficient method of ventral suspension. Intraabdominal shortening of the round ligament is an inefficient treatment for retroversion.

Results of Operations for Cancer of the Breast.—Robert B. Greenough, Channing C. Simmons and Dellinger Barney (*Surg. Gyn. and Obst.*, July, 1907) have drawn the following summary from the reports of the Massachusetts General Hospital for the years 1894 to 1904. Out of 416 cases of primary operation for cancer of the breast, 376 were traced to a conclusive end-result at an average period of eight years after operation, sixty-four cases were alive and well, and seven had died without recurrence over three years after the operation. Counting the operative mortality, there were 320 attempts at radical cure, sixty-seven of which, or 20.9 per cent., were successful. Cases in which the tumor was ulcerated, or adherent to the skin or to the chest wall, and cases in which the axillary glands were palpably enlarged, gave notably less promising results than when these conditions did not exist. Medullary carcinoma was more grave than that of the scirrhus type and

adenocarcinoma and colloid were relatively of a far less malignant type. The duration of the disease and the age of the patient, other than in the individual case, exerted little influence on prognosis. Extensive operations with wide removal of skin gave the greatest freedom from local recurrence. Removal of the pectoralis minor appeared to be of slight significance. Incomplete operations on early cases yielded better results than extensive operations on cases which were well advanced. Recurrence in the scar occurred in less than one-half of the cases. Internal metastasis was most frequent in the lungs, mediastinum, in the axillary and supraclavicular glands, the liver and the spine. Seventeen of the eighty-eight cases, or 19 per cent. of those passing the three-year limit without recurrence, showed recurrence later, and four cases developed recurrence six years or more after operation.

A. F. Janas (*Surg. Gyn. and Obst.*, July, 1907) has been able to follow 177 cases operated on for cancer of the breast up to the three-year limit or beyond. In this series there were thirty-eight recurrences in one year, and thirty-four in the second, leaving 105 cases without recurrence at the end of three years, about 56.7 per cent. The writer cites a case of recurrence at the end of fifteen years and others at ten, eight and five years.

Frederick S. Dennis (*Surg. Gyn. and Obst.*, July, 1907), in a review of fifty cases, brings out the following clinical facts. Cancer of the breast is sometimes permanently cured, as at least twenty-five years have elapsed with no evidence of a return. Cases may go as long as eighteen years and then have a return in some other organ. In cases in which no return has been observed, the operation was performed, almost without exception within six months from the incipency of the disease, thus showing the great importance of early operation. The more radical the operation within reasonable limits, the better the prognosis. In some cases with extensive ulceration, hemorrhage, widespread axillary involvement the end-results have been entirely satisfactory.

Syphilitic Gumma of the Mammary Gland.—Danel (*Jour. des Sci. Méd. de Lille*, Dec. 7, 1907) records a somewhat rare case of gumma of the mammary gland. There are very few reported cases of syphilitic growths in this location. The patient gave no history and no evidences of having had syphilis, neither had her husband had it. The author believes that it was a true case of hereditary syphilis. The gland, when first seen, had already ulcerated and showed a mass of grayish tissue exuding typical gummatous secretion. There was almost no pain and the axillary glands were not involved in the growth. The patient's general condition was excellent. There was no cancerous odor. Antisyphilitic treatment gave good results at once and in one month cicatrization was complete. The cause which determined this location for the disease is unknown.

There is some difficulty in diagnosis from tubercular lesions of the mammary gland, especially when the gummata are multiple. When ulceration has occurred it should be easy. Age, general condition, absence of glandular involvement, and the evolution of the growth must all be considered in the diagnosis.

Tuberculous Origin of Dysmenorrhea and Its Treatment with Spengler's Tuberculin Preparation.—Josef Hollos and Karl Eisenstein (*Gyn. Rund.*, Bd. I. H. 23) calls our attention to the frequency with which dysmenorrhea is found in tubercular subjects, and its relief by the use of Spengler's tuberculin. They refer to ten cases treated in this way. They believe that in many cases of dysmenorrhea the cause is a latent tuberculosis. In one case the woman had complained of menstrual pain since the first appearance of the menses. In the other cases patients from twenty-eight to thirty-nine years of age who undoubtedly had tuberculosis were much relieved in their menstrual troubles by the tuberculin treatment. All the subjective and objective symptoms were improved. An occult tuberculosis may cause many a case of dysmenorrhea which is not relieved by the ordinary means of treatment. The etiological factor in the dysmenorrhea is a latent tuberculosis, and this accounts for the failure in results of treatment by drugs or operative procedures.

Significance of Malignant Chorioepithelioma.—Dr. George Schmauch (*Surg. Gyn. and Obst.*, Sept., 1907) finds there is only a gradual difference between the simple invasion of the uterine muscles by villi and their sequelæ, such as adherent placenta, the common and destructive placental polyp, and the common and destructive mole; between the localized chorioepithelial growths, limited to the uterus and placental region, and the villous infarcts developed by deportation of villi; and finally between those cases in which the lungs were able to retain and master scattered fetal cells, and the typical chorioepithelioma malignum, which becomes generalized through metastases. Only the last two types deserve the name malignant chorioepithelioma. The writer has reviewed the literature of 206 cases and finds the malignancy of the different classes of cases as follows: Of forty-five not operated and twenty-one operated cases that died of general metastases, thirty-three and thirteen could be classified, respectively. Among these forty-six cases, twenty-nine and eleven, or forty of typical chorioepithelioma and two and two or four of syncytial chorioepithelioma were present. The remaining two were connected with destructive mole. The transition form, syncytial chorioepithelioma (predominance of large syncytial cells besides Langhans' cells and syncytium) shows a lesser malignancy. The larger number of these cases shows only metastasis in the lungs and not a generalization. Among the 206 cases the writer finds nineteen cases which he regards as atypical chorioepithelioma consisting of large cells only. Fourteen of them

recovered after operation and five died. Two died of sepsis, one of nephritis, one soon after operation, while in the remaining case no cause of death was given. There is so far not one case of generalization in an atypical chorioepithelioma reported. Among the seventy operated and recovered cases villi were found twenty-eight times either in the uterus or the curettement preceding operation, among eleven cases of villous infarcts, recovered without major operations, villi were found eight times. Altogether there were recorded twenty-two deaths. Only two were generalized chorioepithelioma, three showed deposits in the lungs only. In the remaining fifteen cases, the chorioepithelial proliferations were limited to the uterus. In twelve of these cases death was due to sepsis six times, to hemorrhage six times; in the other three cases the cause could not be established. This class of cases is of comparative benignity. While forty-three cases of chorioepithelioma that proved to be malignant were preceded by abortions, only twenty-four followed molar pregnancy. While thirty-nine operated and recovered cases were preceded by mole, we find only eleven cases that recovered after labor at term. On the other hand we find thirty cases recorded that died of malignant chorioepithelioma following full-term labor. Herewith is proved the frequency of chorioepithelial proliferations after mole and the danger of sepsis and exsanguination in destructive mole and placental polyp, but not the histologic malignancy of such relatively frequent proliferations.

Primary Malignant Tumors of the Ovary.—P. J. Dreyfus (*Arch. Gen. de Chir.*, Oct. and Nov., 1907) describes cancer of the ovary as quite frequent aside from cystic forms. The solid form is apt to occur at two periods of life, at puberty, thus occurring in children, and at the menopause. Those females who are the subjects of congenital malformations of the genital organs are particularly liable to the occurrence of cancer of the ovary. The condition is frequently bilateral, and this is accounted for by the author on the hypothesis that in the process of ovulation cells are thrown off from one ovary that are carried over across the abdomen to the opposite side, and thus reach the opposite ovary, becoming the cause of a new cancerous formation there. Thus the propagation is not lymphatic. The important symptoms of this form of cancer are amenorrhea, especially in the early stage, accompanied by pain which is often severe and paroxysmal, and as a later occurrence ascites, with the appearance of a tumor, recognized by bimanual palpation as originating in the ovary. The position of the uterus varies in these cases. Histologically we have epitheliomata, arising from the epithelium of simple or dermoid cysts, of the follicles, of Wolffian remains, and from germinative epithelium. Sarcoma is also frequent and arises from degeneration of a fibroma, from the ovarian stroma, from the theca folliculi, or a corpus luteum. Endothelioma is of doubtful existence. If

it occurs it may arise from the endothelium of any part of the lymphatics, or from the blood-vessels. The course in the young is very rapid, death closing the scene within a few months. In older women there may have existed for years a benign tumor which becomes malignant and undergoes a slow evolution. There is no treatment for this condition but removal at as early a time as possible. The best results are obtained in cases in which the uterus and all the adnexa are thoroughly removed.

Conservation of the Ovaries in Hysterectomy.—Dolérís (*Ann. de Gyn. et d'Obst.*, Nov., 1907) thinks that the value of leaving an ovary or a portion of an ovary behind in hysterectomy is doubtful. If its structure is altered by disease the remnant cannot be of any value. Its value could only be founded on the theory of auto-opotherapy. The author divides the patients operated upon by him into three categories; in the first are placed those that have experienced neither accidents, nor troubles of any sort as a result of a double castration; the artificial menopause having affected them in no way. These were women at about the time of the menopause. The second category includes young women in whom the ovaries were removed after a long period of pain and other bad symptoms, and in whom the menopause caused no trouble except hot flashes, emotionalism and such symptoms for a few months. In the third category are those neurotic women in whom there were exaggerated nervous troubles before the operation and the same condition continued after it. They would not have been cured by any means used. The author has never had any success from the administration of ovarian extracts either in the congestive troubles of the natural menopause or in the morbid manifestations of the artificial menopause. He believes its value to be entirely due to suggestion. The author gives two illustrative cases.

Discussing this paper, Pinard said that most of his patients had had no bad effects from ablation of both ovaries after the age of thirty. In seven cases it had become necessary to operate for cystic degeneration of an ovary that had been left behind. In women from whom the uterus was removed for painful menstruation on account of infantile uterus there was no benefit at all. In these women the ovaries should always be removed because they always produce painful conditions. In cases of fibroma uteri in young women the removal of the tumor and the ovaries has produced no trouble at all. The younger the patient the more urgent is the demand for the removal of the ovaries. In older women the ovary is less liable to degenerate. The removal of the ovaries seems to have no effect on the flow of milk. A patient observed by the speaker nursed a child for two years after the necessary removal of the uterus and adnexa. The shape of the bust seems to be unaltered by removal of the ovaries. As to the possibility of the sexual desire being taken away, it has been observed that often it is intensified instead.

Thermal Medication in Gynecology, Obstetrics, and Urology by Means of the Medical Bock-Samovar and its Accessories.—Nicholas de Plantier (*Ann. de Mal. des Organes Genito-Urinaires*, Nov. 1, 1907) describes the necessary conditions for a useful vaginal douche as a heat maintained at or about 45° C. to 50° C. for a considerable period, twenty or more minutes, the apparatus being so arranged that the douche can be taken in the dorsal position, while the pressure of the water is slight, the bag raised not more than twenty to twenty-five centimeters. All these conditions are fulfilled by an apparatus which he denominates the medical bock-samovar. This consists of a metallic receptacle which contains three liters or more, and which is covered so as to maintain the heat, while by means of a chimney running through its center and a slide arrangement below, a cake of slowly burning charcoal is kept lighted during the whole course of the douche. The chimney serves as a means of keeping up a draught for the charcoal, and the heat generated is thus communicated to the water. There are several different cannulæ arranged for the vagina, uterus and bladder. The vaginal cannula is of china, a material that is easily sterilizable, and a nonconductor of heat. A thermometer is attached by which the temperature of the water can be regulated. The patient can insert the cannula and after regulating the heat can lie at ease for an hour or more, while the douche is flowing, without the necessity of arising to replenish the water. A cannula with a double current is arranged for intrauterine use, so that it is impossible for any water to be retained in the uterine cavity. This is of two sizes, smaller for abortion before the sixth month, and larger for labor at term. The apparatus is recommended for the prevention as well as the treatment of puerperal infection and postpartum hemorrhage. It has a double rôle, prophylactic and curative, and is of value in metritis and endometritis.

Treatment of Metritis by the Use of Cups Over the Cervix after Bier's Method.—F. Jaule and Robert Loewy (*La Presse Méd.*, Dec. 15, 1907) have treated fifteen patients for metritis, either simple or complicated by peritonitis, slight adnexal inflammations, or pelvi-peritonitis, by means of a speculum from which the air is exhausted by a syringe after the cup is in place. Daily sittings were given except when pain was produced. In these cases the application was made every second or third day. In some cases pains were severe, while almost every application made for the first time was somewhat painful, the pain being such as is felt at the menstrual period by most women. The cervix becomes of a violet color when suction is applied, and mucus or pus present in the cervical canal is sucked out. If there is an ulceration a small amount of blood flows from it. On the removal of the cup the cervix is elongated, violet colored, and covered with coagulated mucus and blood. Any ulceration becomes of a blackish color. Flow of pus or blood at once stops. Pain is not felt after the appli-

cation, but the hypogastrium remains sensitive for some hours. After several sittings the pelvic congestion is lessened, symptoms of metritis and parametritis are relieved, and ulcerations heal and entirely disappear.

Paresis of the Brachial Plexus After Operations on the Pelvis.—A. Horst (*Zent. f. Gyn.*, Dec. 7, 1907) states that paresis of the muscles supplied by the brachial plexus is not uncommon after pelvic operations owing to pressure of the arms on the edge of the operating table and on portions of the body. In some of these cases the disability remains for a long time and necessitates a long course of treatment. It occurs especially in operations that necessitate a long period of narcosis. The radial nerve is pressed upon by the upper arm lying across the edge of the table. Forced hyperextension combined with abduction of both arms may affect the entire brachial plexus. This pressure may be made by the head of the humerus in the axilla, or by the scapula, or by the clavicle upon the ribs. These cases occurred at the University Clinic in Berlin in spite of great care in the anesthesia. The author has constructed a shoulder rest furnished with inflated rubber cushions over the rest, and since the use of this apparatus there have been no more arm paralyses.

DISEASES OF CHILDREN.

Etiology and Pathogenesis of Rickets.—Antonio Iovane and Salvatore Forte (*La Pediatria*, Sept., 1907) have undertaken to prove experimentally that one of the chief, although not the only cause of rickets in children is the absorption of the products of dyspepsia, gastro-enteritis, and diarrheal diseases. To this end they injected subcutaneously into rabbits alcoholic and watery solutions of the feces of children suffering from rickets and gastro-intestinal troubles. They succeeded in producing in nearly all the animals experimented on transformations of the bones very similar to those found in rachitic children. The bones were markedly softened, the amount of calcareous material in them was diminished, and the shaft of the long bones was curved as in rachitic children. The animals walked weakly and the belly hung down so as to touch the ground. The layer of cartilage between epiphysis and diaphysis was thickened and the cartilage cells were found infiltrating the spongy bone. All the histological lesions resembled the conditions found in human rickets. The authors believe that they have demonstrated that the poisonous products of intestinal malassimilation absorbed into the system of the child go far to produce the condition denominated rickets.

Prevention of Pelvic Deformities as a Result of Rickets.—L. M. Bossi (*Zent. f. Gyn.*, Nov. 9, 1907) says that we may do something toward preventing pelvic deformities which may arise as a result of rickets. In sheep in which he has removed

both suprarenal capsules he has ascertained by radiography that marked osteoperiostitis of the pelvic bones had appeared, similar to that of osteomalacia. This was confirmed by operation. By means of the use of suprarenal extract he has cured several cases of osteomalacia. The pain vanished, and the bones became hard again. It is evident that the suprarenal capsules have a marked influence on the skeleton. They influence the deposition of lime salts, and hinder their pathological loss. He recommends the administration of suprarenal extract to rachitic children. Bending of the bones is caused by the absence of ossification of the pelvic bones, the softened bones bending and remaining permanently deformed. If we can produce better ossification of the bones this bending will be prevented. The author thinks that we may do this by the administration of suprarenal extract. He has given it to two little girls with very good results. Many forms of porosity of the bones may be benefited by the use of suprarenal extract. It has been used by Jovane, of Naples, in eighteen cases, and by Jemma at Palermo in ten cases with good results.

Errors of Diagnosis in Arthropathies that may Result from the Presence of Rheumatism, or Hereditary Syphilis, in Supposed Tubercular Swellings.—H. Barbier (*Ann. de Méd. et Chir. Inf.*, Oct. 15, 1907) contends that when we see a case of arthritic enlargement in a child we should not immediately pronounce it to be tubercular and subject the little patient to immobilization and a fresh air cure. Monarticular arthropathies may result from rheumatism. In hereditary syphilis there are absence of pain in the swelling, absence of tendinous contractions and deformity, absence of fungosities and of fistulæ. There is swelling of the epiphysis and no muscular atrophy is present. Other stigmata of syphilis should be sought for, such as deformities of the teeth, palatine vault, and nasal bones. Interstitial keratitis is a valuable sign of syphilis. The lesion is first bony and later arthritic. The author gives illustrative cases. His conclusion is that we should investigate the family history, the past history, and the physical condition of the patient carefully and exclude rheumatism and syphilis before we undertake antitubercular treatment.

Bacteriology of Congenital Syphilis.—Hans Bab (*Munch. Med. Woch.*, Nov. 12, 1907) describes his examinations of the organs of children dying of congenital syphilis. He combats the theory that presence of the spirocheta pallida was the result of maceration of the fetus by quoting a case in which the first symptoms appeared after birth the child living five and a half weeks. Here the spirocheta pallida was found in the internal organs. Tests were also made for the presence of antigen in the tissues. The author believes that there is good reason to consider the spirocheta pallida as the cause of syphilis. The antitoxins of syphilis developed against the spirochetes may be neutralized by the luetic antigens in the body of the child. The

process of development of antitoxins need not always bring about a cure and immunity, but may result in the death of the child. He gives the result of the examination of fifty cases of congenital syphilis, biological, and microscopico-bacteriological. Spirochetes and antigens were positive in seventeen cases, and negative in fifteen. In one case spirochetes were present but the antigen reaction was absent, and in one case there was a weak antigen reaction and no spirochetes were found. In the cases examined biologically, spirochetes were found in the internal organs in twenty out of twenty-five. In the five cases in which they were absent the antigens were also absent. The antigen reaction in these twenty-five cases was positive in sixteen, negative in eight, and doubtful once. Out of eight cases in which the placenta was examined antigens were found in three. In the mother's milk, in nine cases examined the antitoxins were found in seven. The infection was of fourteen years' duration in one of the other two. In the other there was a postconceptional infection. Of the seven positive cases both mother and child were infected in two. In three cases antisyphilitic treatment had been undergone by the mother. In one case of syphilis in the mother antigens were found in her blood. Examination of the sperma in ten syphilitic subjects showed the absence of spirochetes, antigens and antitoxins.

Elimination of Uric Acid in Children in Normal and Pathological Conditions.—E. Modigliani (*Rivista di Clin. Ped.*, October, 1907) has experimented on children fed on milk and bread as to the elimination of uric acid. The children were fed on milk for four days before the uric acid was estimated, and were kept in bed while the determinations were being made, since it is known that more uric acid is eliminated during exercise than when at rest. Examinations were made for three consecutive days. The conclusions arrived at are these: There are daily oscillations in the formation of urea which are more evident in sick than in well children. The amount of uric acid eliminated is in constant relation with body weight. It varies within certain limits: Between 0.61 gr. at two years and 0.168 at six years. In sick children the amount oscillates between 0.062 and 0.300 gr., limits more broad than in well children. The amount varies in sick children with the degree of leukocytosis, the age and the body weight.

Periodic Vomiting in Children.—Monlau (*Jour. de Méd.*, Nov. 10, 1907) directs our attention to the fact that incoercible vomiting, lasting from one to four days, appears in children without apparent cause. The attack is sudden, without much fever. The breath smells of acetone. Vomiting is first of food, then of watery fluid. Prostration is extreme. Consciousness is preserved, but slight movements and ingestion of even ice will cause the vomiting to recur. Constipation is present, and the abdomen is soft. Urine is diminished, and some albumin is present. Crisis is as sudden as the attack; the pulse

loses its irregularity, fever falls, appetite and the power to take food return, and the child is soon well. As the child grows older these attacks are less frequent. They are more common among children of the better class than in hospital practice. They occur in families that are subject to gout, rheumatism, diabetes, migraine, asthma, epilepsy, etc. There is a nervous arthritic diathesis. Mucomembranous enteritis and appendicitis are frequent with these children, and the attacks are often preceded by rhinopharyngitis. Medicinal treatment of the attack consists of the administration of calomel and palliatives. The general treatment involves freedom from study, fresh air, exercise and hydrotherapeutics. Vegetables and water should be used freely, and spices, acids and sweets should be denied.

Acute Encephalitis in Children.—J. Comby (*Archiv. de Méd. des Enf.*, Oct. 1907) says that the brain of the child presents a rich circulation, is of relatively large size and this renders it more liable than the adult brain to morbid conditions. The hyperactivity of the childish brain renders the frequency and gravity of encephalitis greater. Yet up to the present time encephalitis has occupied an unimportant place in the nosology of childish diseases. The author thinks that we should give it a more important place than is given to meningitis, which is only an inflammation of the relatively unimportant envelopes of the brain. The symptoms of the two conditions are often so blended that much is laid to the meningeal inflammation that belongs to the encephalitis. After studying the disease in detail he gives these conclusions: The lesions of encephalitis are diffuse or circumscribed, and range from congestion to degeneration of nerve cells and fibers, with intense polynucleation about the vessels, and even small abscesses. It may involve several segments of the brain and be associated with a poliomyelitis and polyneuritis. It may appear at any age, even perhaps in intrauterine life. It results in many cases from infectious diseases, and nervous predisposition plays an important rôle in its etiology. It begins suddenly with convulsions, which pass into a comatose condition without stiffness of the neck. Paralyzes of a spasmodic nature are frequent sequelæ, as well as psychical troubles. Intellectual degeneration, idiocy, mutism, and cerebral excitation may follow it. There is a benign form which is cured without sequelæ, and a severe form which results in an early death or incurable infirmities. The prognosis is good in many cases, better than in meningitis. Differential diagnosis depends on its sudden onset, absence of stiffness of the neck, of tache cerebrale, Kernig's sign, vomiting, and constipation. Treatment consists of warm baths, calming spongings, ice to the head, leeches to the mastoid processes, and later iodide of potash.

Electrical Diagnosis and Treatment of Infantile Paralysis.—Delherm (*Ann. de Méd. et Chir. Inf.*, Nov. 15, 1907) tells us that electricity is of great value in making a diagnosis between certain

doubtful cases of infantile paralysis and neuritis, or muscular atrophy, which give the appearances of spinal paralysees and myopathies. It is also of great value in giving a prognosis. The electrical examination for diagnostic purposes should be made about three weeks after the beginning of the illness. For this purpose the muscles may be divided into four groups: 1. Those that react feebly to the faradic and galvanic currents. These muscles will regain their power. 2. Those that react to neither galvanism nor faradism; these muscles will atrophy from nonuse, or will remain stationary. 3. Those muscles that do not react to faradism, and in which the galvanic formula is reversed; these will atrophy in a more or less marked manner from lack of function and medullary lesion. The fourth group consists of those that present the longitudinal reaction, and these act like the third group. Under electrical treatment the first group will recover rapidly; most of the second group will recover, but remain weaker than the normal side; those of the third and fourth groups will atrophy in spite of any treatment. Any case of infantile paralysis, no matter how old, will be benefited by electricity, and the earlier the treatment is begun the better. Its action produces vaso-dilatation and increases the circulation of the muscles, which are badly supplied with blood on account of the lack of motion. The temperature of the limbs is raised and the atrophy is lessened. The author begins treatment about the end of the fourth week. The use of the faradic current is to be condemned because either the muscles will not respond to it at all, or its use too strong will do harm by tetanization. The galvanic current is the best to use. When the muscles react to faradism a slowly acting current may be used. When there is reaction of degeneration the galvanic current is employed, placing the limb in a vessel of water through which the current is passed, or passing the current from a large lumbar electrode to one on the neck, the lower being the positive pole. Later interrupted galvanization is made use of, the negative pole on the muscle, and the treatment given three times a week. Much patience is required in order to obtain good results. Massage, hydrotherapeutics, passive movements are advised, and, when deformity has occurred, orthopedic apparatus should be made use of in addition.

Primary Nasal Diphtheria.—G. W. Stimson (*N. Y. Med. Jour.*, Dec. 14, 1907) reports several cases, one occurring in an infant ten days old. He says that primary nasal diphtheria is a more common disease than is ordinarily supposed. It is usually a benign affection the constitutional symptoms being not marked or even entirely absent. The primary form is very seldom malignant *per se*, and especially is this true if it remains confined exclusively to the nares. It displays a tendency to limit itself to the nose. When it does spread to portions of the respiratory tract lower down, the severity, that is, the toxemia and systemic disturbance, seems to increase *pari passu* with, and

as a direct result of, such extension. There is a decided tendency towards chronicity. The prognosis is, as a rule, good. Paralytic phenomena, such as loss of knee jerks, paralysis of the palate, etc., are extremely rare. It is capable of acting as a focus of infection, and the resulting cases may be of a malignant type. The importance of early detection of this disease by bacteriological examinations of all cases of persistent purulent rhinitis of doubtful origin, especially in children, cannot, therefore, be over-estimated.

Diphtheria, Scarlet Fever and Measles.—Believing that the last two diseases are often combined with diphtheria in the same patient, and that it is impossible to separate cases of pure scarlatina from those accompanied by diphtheria, J. M. Day (*Dublin Jour. Med. Sci.*, Oct., 1907) advocates giving diphtheria antitoxin as a routine procedure to all these cases.

Irregularity of the Pulse in Diphtheria.—O. H. Peters (*Lancet*, Sept. 14, 1907) shows by a comparison of ninety-two cases of diphtheria with ninety-five of scarlet fever that irregularity of the pulse is about equally common in these diseases. In most cases this irregularity is merely of respiratory origin, the pulsus paradoxus. In most cases respiratory irregularity of the pulse in children persists throughout their stay in hospital—that is, for periods of from four weeks to as many months—especially in marked cases, although they have otherwise regained their normal state of health. There is, however, always a great tendency for it to grow less with the return to the normal vascular tone and, as might be expected, adolescents and adults are most likely to show improvement in this respect. More than one writer has urged that the patient should be retained in bed for at least three months if irregularity of the pulse continues. Should irregularity, however, be as unimportant as it has been shown to be in seven-eighths of all cases, it becomes rather a serious matter, economically and medically speaking, to keep a practically healthy child in bed for a month longer than is necessary, particularly as a condition of slight general asthenia is much more likely to disappear with exercise in the open air. Of course, it is none the less necessary first carefully to decide that the irregularity is no more than respiratory. The presence of cardiac signs will often help to decide this matter. Should these, however, be lacking, the pulse otherwise good and the patient apparently returned to health, he may be at once discharged.

Transmission of Bovine Tuberculosis.—H. L. K. Shaw (*Jour. Amer. Med. Assn.*, Oct. 12, 1907) reviews briefly some of the evidence for and against the transmission of bovine tuberculosis to infants and young children. The important conclusion is: That tuberculous cattle are a menace to public health and give the disease through their milk in rare instances has been proved. Efforts to stamp out the disease in cattle should be made, but the attention of the public should not be diverted from the great

and very real danger of human contagion. Whether this takes place through the respiratory or digestive tract is immaterial.

Infantile Tuberculosis.—L. E. Holt (*Arch. of Ped.*, September, 1907) reports that during the nineteen months ending May 1, 1907, sixty-seven cases of pulmonary tuberculosis were treated in the Babies' Hospital; sixty-two of these being infants under two years, and fifteen under six months of age.

The diagnosis rested upon finding the bacilli in the sputum in fifty-four of the cases; upon postmortem findings in ten; and of the remaining three, one had tuberculous meningitis (bacilli found in the fluid drawn by lumbar puncture); one reacted to tuberculin, and the third gave typical clinical symptoms of pulmonary tuberculosis. In only one-half of these cases was there any consolidation in the lungs present at the time the diagnosis was made, and in nine cases there were no pulmonary signs whatever.

Tubercle bacilli were demonstrated in the sputum of over 80 per cent. of these cases while the physical signs did not show an advanced lesion. The sputum is best obtained by passing a small bit of muslin held by an artery clamp into the pharynx during a paroxysm of coughing—spontaneous or induced—and sometimes by simply inverting the child when coughing and catching the sputum in a cup. Of the cases reported a definite history of tuberculosis in one or the other parent existed in twenty-one cases, with positive evidence of the disease in some other member of the family in six others, and a doubtful history in two others. The infant is exposed to house infection more intimately than any other member of the household. The older children are away at school, or out of doors at play; while the infant is very apt to be in charge of the invalid who is ill at home, and hence its opportunities for infection are greatly increased.

The relatively insignificant and infrequent intestinal lesions seen in the tuberculosis of children seem rather surprising when we consider for how long a period and in what numbers bacilli are coughed up and swallowed. It would appear that the intestinal tract is not very vulnerable to tuberculosis at this period of life.

The foregoing observations tend strongly to confirm one in the opinion that it is direct contagion which is responsible for most of the tuberculosis of infants rather than infection through milk or other foods.

The writer states also that during fourteen months past forty-two cases of tuberculous meningitis were treated in the same hospital, and in every one tubercle bacilli were found in the cerebrospinal fluid. They are more likely to be found in the last portion drawn than in the first. The average time consumed in searching for the bacilli in this series was one hour. The bacilli are usually more numerous in late punctures than during the early stages of the disease. Bacilli were also found

in the sputum in twenty-two of the forty-two cases although in only five of these was there any evident consolidation of the lung and in nine there were no signs whatever in the chest.

Chronic Cervical Adenitis.—J. T. Schell (*Arch. of Ped.*, Oct., 1907) states that in the early stage tuberculous adenitis does not differ clinically from simple hyperplasia. Prior to the third year cervical gland enlargement can usually be considered nontuberculous. Tuberculous lymphadenitis is most common among the poorly nourished classes. A history of living with tuberculous patients is strong presumptive evidence of a tuberculous infection. The frequency with which tubercular adenitis follows simple hyperplasia, so often noticed as the result of an infection during the various diseases of childhood, such as scarlet fever, diphtheria, measles, etc., would seem to suggest that any chronic irritation of the lymphatic glands predisposes to a later tubercular infection. The point of entrance of the infection is most frequently through the upper respiratory canal, and, therefore, any chronic enlargement of the tonsil or adenoids may suggest the possibility of tubercular infection, especially if on removal of this tissue a microscopical or bacteriological examination reveals the presence of the tubercle bacillus. Carious teeth are believed to be a common mode of infection. The clinical course and appearance of tubercular adenitis vary greatly. The disease is usually bilateral, and, while the course is slow, varying from a few months to three to four years, and in a sense is progressive, there occur intermissions in its progress with apparent resolution and with subsequent outbursts of new activity, which often are dependent on some acute infection following influenza, whooping-cough, etc., but at other times due simply to an apparently lessened resistance, the result of the state of the general health. Many cases show a mixed infection which alters the clinical appearances. No local treatment is indicated, as a rule. Cod-liver oil and syrup of the iodide of iron seem to have a good effect, combined with general hygienic measures and supplemented by the x-ray treatment. Inasmuch as it is next to impossible to remove all of the diseased glands—and in the attempts at this almost impossible feat the patient is more than likely to be reinfected all along the line of dissection—the complete radical operation does not appeal as a wise surgical procedure. The radical operation has a limited field of usefulness. When a gland shows a distinct softening it should be excised, curetted, and packed with iodoform gauze, combined with the use of the x-ray.

Duty of the Physician to the School-child.—W. C. Hollopeter. (*Jour. Amer. Med. Assn.*, Oct. 19, 1907) says that the school life of the child at the present day is too complex and difficult. Too many subjects for study have been introduced, and too great thoroughness required for the young mind. This has a tendency to unbalance development and create nervous irritability. In teaching large classes the personal equation is lost. The most

valuable element of the teacher is showered on the bright child while the backward or defective are frequently lost to sight. Teachers who fail to recognize a defective child commit a great injury by permitting the child's mind to be unemployed. This is especially true of the depraved type of children. The children in reform schools, chronic drunkards, criminals, the tramp, vagrants, and low prostitutes, are largely recruited from this class of the slightly mentally deficient who were neglected in their youth. In the gathering of classes of children of unequal capacity, the teacher fails to recognize the varied powers of attention, which is of first importance in the process of mental development. The physician should take a deeper interest in watching the mental defects and having children so afflicted properly classified. The physical defects should receive more attention than is now given; 120,000 defective school children exist in the United States.

Alcoholic Cirrhosis of the Liver in Children.—In an editorial (*Brit. Jour. Child. Dis.*, Oct., 1907), a plea is made for care in the prescribing of alcohol for children. Autopsies recently made in England have shown that the deaths of three children from three to five years of age resulted from cirrhosis of the liver, apparently alcoholic. This is usually brought about by well-meaning parents but frequently by the physician who orders, without definite instructions, "a little port wine." Such negligence cannot be too strongly condemned.

Cane Sugar in Relation to Diseases of Children.—C. G. Kerley (*Ann. of Ped.*, Oct., 1907) says it would seem that to some individuals cane sugar is sufficiently toxic to produce a perversion of function with symptoms of its own, as in cyclic vomiting, and in others to produce enough change to invite or allow bacterial invasion, as in acute articular rheumatism and endocarditis. The sugar capacity of children varies greatly. Some can take as much as three to four ounces a day without harm, while in others a few grains will produce signs of sugar poisoning. The writer defines a "sugar susceptible" as being usually a child of rheumatic or gouty ancestry. While the ailments from which the individual "susceptible" may suffer are various, there is one characteristic peculiar to all, namely, a tendency to recurrence and in a lesser degree to chronicity. Among the "sugar susceptibles" are included those who have recurrent or persistent head colds, recurrent or persistent bronchitis, recurrent bronchial asthma, recurrent vomiting, recurrent urticaria, rheumatism, chorea and eczema. Seventy-eight cases, aged from eighteen months to ten years were studied by the author. In these, cane sugar was absolutely excluded from the diet and saccharin substituted. The most satisfactory results accomplished were in the catarrhal affections of the upper respiratory tract, recurrent bronchitis, asthmatic bronchitis, coryza, common colds and tonsillitis. Eight cases of recurrent vomiting were treated by exclusion of sugar and internal medication, with good results in five. Of eleven cases of obstinate eczema nine had been re-

lieved for at least six months when reported. Two cases of persistent urticaria were relieved. In eleven cases of chorea negative results were obtained.

Value of the Examination of Milk in Breast Feeding.---Luis Morquio (*Ann. de. Méd. et Chir. Infant.*, Nov. 1, 1907) classifies the digestive troubles of infants under five heads: Intestinal colic, simple vomiting, gastro-intestinal dyspepsia, simple diarrhea, and digestive infections and intoxications. The author gives his experience at the Infant Asylum of Montevideo for the past five years, where careful examinations of the breast milk were made. Analysis showed considerable variations in the fats from day to day and even on the same day. After seventy analyses he found that all the contents of the milk vary considerably in the same and in different individuals. He has seen an infant do badly on his own mother's milk, while he thrived on that of another woman, the analysis of the two milks showing the same composition. In general the results of breast feeding were found good no matter what the composition of the milk. The size of the milk globules is very variable and has no effect on its digestibility. Excess of casein never was found to give any trouble. Causes of digestive troubles seem to be superalimentation, bad adaptation of infant and nurse, pathological conditions, emotional causes, and menstruation. The beginning of menstruation seems to cause the milk to become toxic to the infant. The conclusions given by the author are these: It is impossible to establish any relation between the examination of breast milk and the conditions of adaptation of the infant. The child seems to be the only standard of quality of the milk of any given nurse. This milk is modified under certain circumstances even to the extent of becoming toxic, without its chemical composition and microscopic appearances giving any explanation of these effects.

Percussion of the Chest in Infants and Children.---S. McC. Hamill (*Jour. Amer. Med. Assn.*, Nov. 2, 1907) protests against the neglect of this means of diagnosis. He says that the only satisfactory position for percussion of the chest is one which produces complete muscular relaxation and symmetry of its two sides. In infants and young children the front and antero-lateral areas can be examined best with the patient lying flat on his back, with the head in direct contact with the bed, and maintained in the median position by the hand of the attendant. The arms should rest at the sides of the body, the thighs and legs should be slightly flexed and the vertebral column should be straight. For the axillary regions the position should be the same as for the front of the chest, save that the arms should rest on the bed at right angles to the vertical plane of the body. For the posterior surface those old enough and not too ill to sit up should be seated on a narrow table or chair, with the legs hanging over its side. The arms should be placed close to the sides of the body, the forearms across the lower abdomen, with the hands

resting on the inner surfaces of the thighs. The body should be maintained in a natural stooping posture, without any lateral curving of the spine, and with the head again supported in the median position by the hand of the attendant. Marked flexion or abnormal extension of the body—positions which throw the back muscles into a state of tension—are objectionable. To examine the back of an infant it should be held against the chest of the attendant, with its head over her shoulder, its buttocks being supported by her sight arm and hand when the head rests on her right shoulder and by her left arm and hand when the head rests on her left shoulder. The vertebral column should be straight and the two sides made as nearly symmetrical as possible by having the attendant steady the infant by holding its arm with her free hand. The last phalanx only of the pleximeter finger should be applied to the chest as a larger portion might cover both dull and resonant areas on the little chest. It is not necessary to place the finger parallel to the ribs as it is in the adult, but the wrist-motion of the percussing hand is quite as essential. The advantages of a light stroke cannot be too strongly emphasized. Deep inspiration raises the pitch of the note by causing tension of the chest wall. Transmitted tympany from distended abdominal viscera may interfere. Placing the patient too close to a wall increases the resonance on the corresponding side. The pulmonary resonance is normally greater in infants and young children than in adults. The principal local difference is the presence of a relatively dull area behind and beneath the inner third of the left clavicle, which sometimes extends outward to the midclavicular line, and always downward until it fades into the cardiac dullness. This is apparently dependent on the posterior position of the lung and the consequent proximity of the great vessels. Posteriorly the percussion sound is everywhere more resonant than over the back of the adult chest, because the muscles are less developed and the ribs and scapulæ more flexible. In percussing the area of relative cardiac dullness the infant should be in the recumbent posture, the distal phalanx only of the pleximeter finger must be placed, with even pressure, parallel to the cardiac border to be outlined, and the stroke must be the lightest possible. In early life the heart is higher in the chest and more horizontal than in the adult, the upper border lying behind the second rib while the right border is at or a little beyond the right edge of the sternum and the left is just outside of the left midclavicular line.

Visceral Rheumatism in Children.—E. Weill and Luvien Trevenot (*Arch. de Méd. des. Enf.*, Nov., 1907) describes visceral rheumatism as a form of the disease which is found among children without any joint manifestations of rheumatism. It comes on insidiously and may be marked only by vague pains in the muscles without any redness or swelling of the joints. There are present constant endocardial lesions and frequently these are accompanied by pericarditis. The temperature is generally

very high. Under the influence of rest, ice, and salicylates the palpitation lessens as well as the dyspnea, and the child appears perfectly cured. Another attack may supervene, however. After several attacks the disease may go on to a fatal termination, death occurring without edema or asystole and in full consciousness. The anatomical lesions are those of rheumatism which attacks the endocardium, pericardium, and myocardium, sometimes the pulmonary tissues. The author advocates the use of subcutaneous injections of salicylates to combat this form of rheumatism.

Urinary Infection in Children.—A paper on this subject by I. A. Abt (*Jour. Amer. Med. Assn.*, Dec. 14, 1907), while containing nothing original, has the merit of calling attention to a fairly common and seldom recognized affection of children. It is caused usually by the colon bacillus, generally as an ascending infection through the urethra, though the infection may be hematogenous. The fact that by far the larger number of infections of the urinary tract occur in female children and that so many infants, even among the more intelligent people, are permitted to lie for hours in soiled napkins, cleansing of the genitalia usually neglected, makes this manner of infection most probable. In the twenty-two cases observed by the writer the following history was usually elicited: The child had apparently been well until it was noted that it became restless and feverish, and very often some disorder of the bowel was suspected. The condition of the bowels did not seem sufficient to cause the severe symptoms. Most of these children were excessively restless, they were pale, and where the condition had persisted for some time they had lost in weight. The fever as a rule was irregular, although it was high. Several times it was noted that the high temperature continued for a number of days, then a remission of one or more days occurred and soon the fever returned. The children refused all food as a rule. The restlessness seemed a very marked symptom. The urine is usually cloudy, of low specific gravity—1.007 to 1.015. In the colon bacillus infection the reaction is acid. A trace of albumin is usually present. Pus, vesical and renal epithelium, occasional casts, and colon bacilli are demonstrated microscopically. Prophylaxis demands careful cleansing of the genitals. If a calculus is the cause of the cystitis, surgical intervention is demanded. In ordinary colon bacillus infections the administration of large quantities of fluid and the use of hexamethylenamin and salol are indicated.

Cystitis in the Nursing Infant.—Guiseppa Caccia (*Archiv. de Méd. des. Enf.*, Dec., 1907) says that cystitis in the nursing child is generally the result of infection by the *bacillus coli*. Gonorrheal infection is uncommon. There is a simple cystitis that results from faults of alimentation or irritation by internal medication. The bacillus must enter the bladder from the urethra, be eliminated by way of the kidney, or pass from the intestine to the bladder through the tissues. The symptoms

are fever of irregular type, pain evidenced by crying and putting the hands to the genitals, nocturnal enuresis and polyuria. Examination of the urine shows an abundant precipitate of a flocculent, white material composed of leukocytes. The colon bacillus accompanies emissions of blood. The reaction is always acid. Microscopically there are epithelial cells, blood corpuscles, and many bacilli. Cultures will confirm their presence. Treatment of the condition demands the use of helmitol or urotropin. The first mentioned drug has never produced any bad symptoms in the experience of the author, while the second has done so. Helmitol liberates in the system formol, which is eliminated by the urine. After the acute stage it may be necessary to wash out the bladder with protargol or albuminate of silver. Serotherapy is still in its infancy.

Goiter in the New-born.—J. Fabre and L. Thevenot (*Lyons Méd.*, Dec. 8, 1907) state that goiter is not infrequent among new-born children. Out of 462 cases observed at Berne, thirty-seven, or 8 per cent. were in new-born infants. The causes are difficult to state. Heredity has a marked influence. By some the disease has been regarded as of infectious nature, while others have stated that a cause was the uterine contractions which crowd the blood into the gland, combined with a predisposition to goiter. There are five forms: Vascular goiter, in which the gland becomes like a sponge filled with blood, is very frequent. Pure hypertrophies are also frequent. Cysts are rare. There are few recorded cases of fibrous goiter in infants. Adenocysts are also rare. Treatment varies according to the form represented. We should recall the possibility of prevention by the administration of thyroid extract to the pregnant mother. Benign cases are treated by iodide of potash internally and iodine externally. Grave forms in which sudden death may occur from pressure of the swollen gland demand operative interference. Goiter is rarely a cause of dystocia.

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ORIGINAL COMMUNICATIONS.

RECENT ADVANCES IN OBSTETRICS.*

BY

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(With Thirteen Illustrations.)

WITHIN the last few years general medicine and surgery have advanced with rapid strides and it is the desire of the writer and the object of this paper to show that the daughter branch, obstetrics, has not fallen far behind.

The advance in obstetrics has been most marked along three lines:

1. Better knowledge of obstetric pathology.
2. Better knowledge of the mechanical problem of delivery.
3. Better procedure.

OBSTETRIC PATHOLOGY.

The condition which has attracted most attention of late, and the one concerning which our knowledge has made distinct advance is the toxemia of pregnancy, as evidenced by pernicious vomiting on the one hand and eclampsia on the other.

Although the etiology of toxemia is still unsettled, it is well established, thanks to the labors of Stone, Ewing, Williams and others that the pernicious vomiting of pregnancy is a toxemia with distinct pathological lesions and with urinary findings so characteristic as to be expected in every marked case, and the degree in which they are present is of value in prognosis.

*Read at a meeting of the New York Academy of Medicine, Feb. 6, 1908.

The chief pathological lesion found in pernicious vomiting is a fatty and hydropic degeneration of the liver which is apt to be diffuse as shown in Figs. 1 and 2, but in some cases is zonal and goes on to necrosis. This zonal necrosis when present is more apt to be central (Fig. 3), or between the center and the periphery of the lobule (Fig. 4), rather than at the periphery,

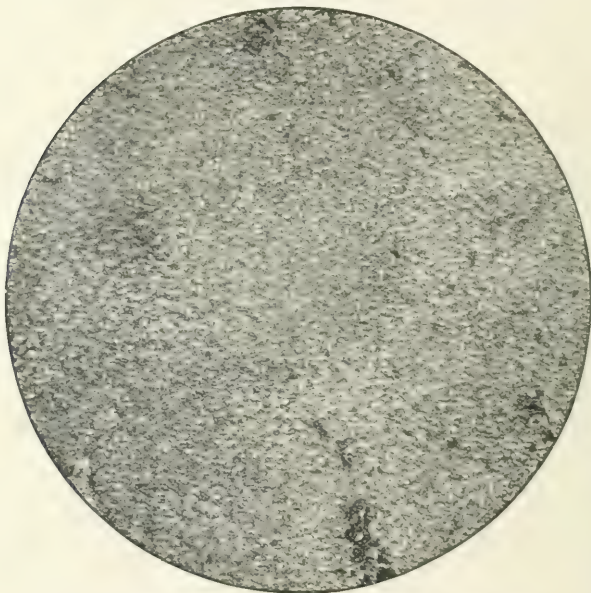


FIG. 1.—Liver of Pernicious Vomiting. Diffuse fatty degeneration.

although often the fatty degeneration (Fig. 1) is most marked at the periphery.

In this fatty degeneration and autolysis of the liver, although hemorrhage from the alimentary canal is not uncommon, there seems to be little tendency to hemorrhage into the liver itself, thus differing from the lesion often found in eclampsia. In some cases, especially if the condition has existed for a considerable time, the lesion is practically identical with that of acute yellow atrophy (Fig. 5).

The kidneys in cases of pernicious vomiting show more or less degeneration of the epithelium of the convoluted tubules.

The associated urinary findings in these cases of pernicious vomiting are the presence of some or all of the following:

Acetone; diacetic acid; β oxybutyric acid; indican, perhaps a trace of albumin and a few casts and sometimes bile pigment.

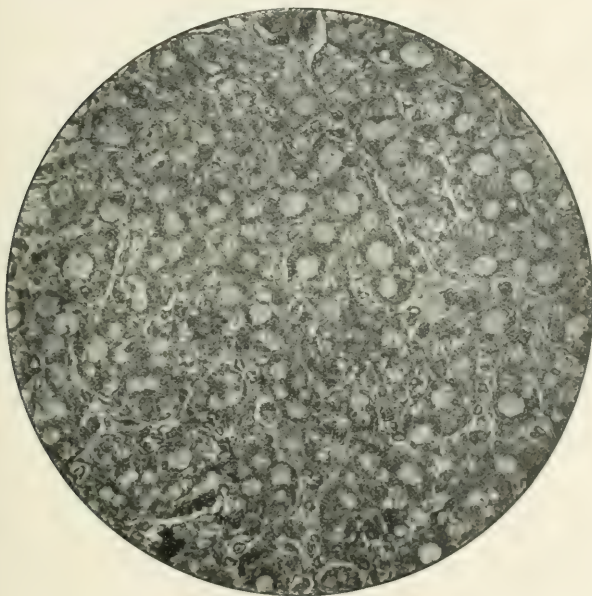


FIG. 2.—Liver of Pernicious Vomiting. High power of Fig. 1, $\times 500$ diameters.

In addition to these there is found abnormal nitrogen ratios, showing a disturbance of proteid metabolism with faulty oxidation, and of late much stress has been laid both for diagnosis and prognosis upon the existence and degree of abnormality in these nitrogen ratios.

In order to interpret the abnormal it is necessary to understand the normal nitrogen output, and for this reason the writer placed in bed for nine days at the Sloane Maternity Hospital two normal pregnant women in their last month of pregnancy.

Their diet was solely milk and water, the same diet which our toxemic patients would be likely to have, and the nitrogen ratios in the twenty-four hour specimens of these women were determined by a professional chemist for each of the nine days with the following results:—



FIG. 3.—Liver of Pernicious Vomiting. Central necrosis.

In one the average for the nine days was

Ammonia Nitrogen.	Urea Nitrogen.	Amido Acid and Undetermined Nitrogen.
4.37% of total nitrogen	84.63% of total nitrogen	5.78% of total nitrogen

In the other

Ammonia Nitrogen.	Urea Nitrogen.	Amido Acid and Undetermined Nitrogen.
5.95% of total nitrogen	81.90% of total nitrogen	7.09% of total nitrogen

This makes the average for the two patients for the nine days:

Ammonia Nitrogen.	Urea Nitrogen.	Amido Acid and Undetermined Nitrogen.
5.16% of total nitrogen	83.26% of total nitrogen	6.43% of total nitrogen

These figures may be regarded as fairly accurately representing the normal nitrogen ratios of normal pregnant women on milk and water diet in the last month of their pregnancy.

In the experience of the writer the cases of pernicious vomiting have shown as a rule a high ammonia nitrogen; high amido acid and undetermined nitrogen and a low urea nitrogen.

This is the ordinary picture of the urinary findings in a well-

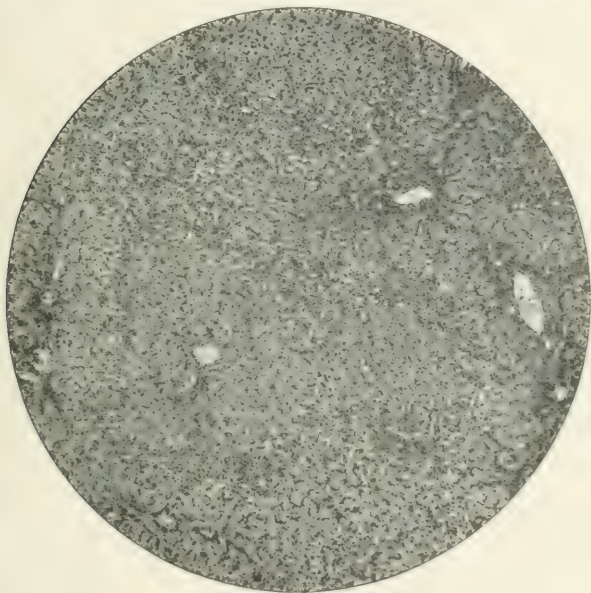


FIG. 4.—Liver of Pernicious Vomiting. Necrosis between center and periphery.

marked case of pernicious vomiting of pregnancy. The degree in which these urinary changes are present and the fact of their increasing or decreasing will determine to a certain extent the prognosis, and yet it is the clinical picture of the patient's general condition taken in conjunction with these urinary findings which alone justifies conclusions.

In eclampsia we recognize clinically two types of cases: the *hepatic type*, in which the liver is the organ chiefly involved and

the kidney but little involved; and *the nephritic type*, in which the kidneys seem to be the organs chiefly affected, while the liver gives few evidences of disease.

In the hepatic type, aside from the convulsions, the characteristic symptoms are vomiting, perhaps vomiting of blood, with little edema; little albumin and few casts, at least until after a convulsion has occurred. Often there is jaundice, tenderness

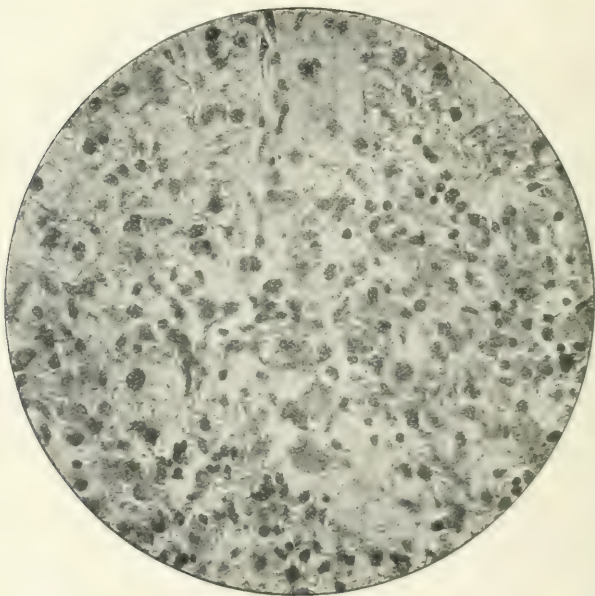


FIG. 5.—Liver of Pernicious Vomiting. Yellow atrophy.

over the liver and tympanites. In the nephritic type the characteristic symptoms are headache, disturbance of vision, high tension pulse, nervous irritability, edema, marked albuminuria and casts.

These two types are often combined, but not infrequently one sees a case illustrating clearly the distinctive type, and the pathological material obtained by me at the Sloane Maternity Hospital seems to justify this clinical division.

Since the appearance of the monograph by Schmorl, in 1893, the tendency has been to regard the liver lesions in all cases of eclampsia as more characteristic than those of the kidney, and to consider them necroses, either hemorrhagic or anemic, always situated at the periphery of the lobule, produced according to Schmorl by thromboses in the smaller portal vessels.

Judging from the material in the hands of the writer the

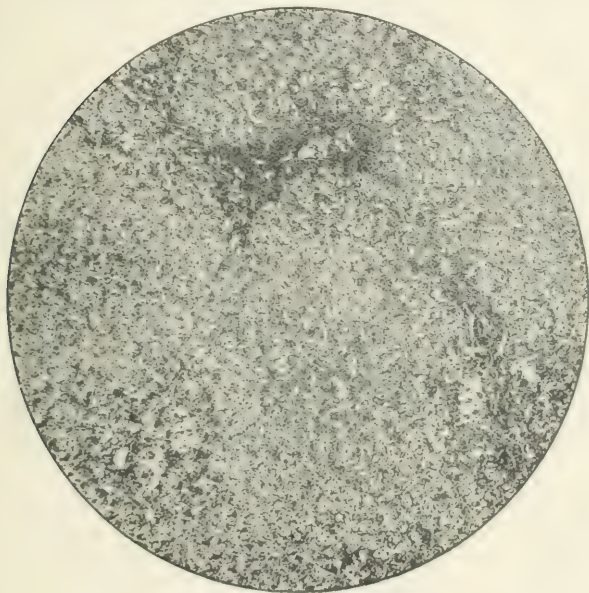


FIG. 6.—Liver of Eclampsia. Nephritic type.

hepatic lesions in eclampsia are not as definite or uniform as would be inferred from the above. In the first place, in the cases dying of eclampsia which we have classified as belonging to the hepatic type, the lesions in the liver have been marked, while in the cases dying of eclampsia of the nephritic type, the hepatic lesions have been slight, so slight in fact in some cases that different pathologists, to whom the slides were shown by the writer, pronounced the liver normal.

In the livers studied by me three varieties of lesions have been evident:

1. In a case of the nephritic type a section of whose liver is shown in Figs. 6 and 7, and kidney in Fig. 8, the cells near the periphery of the liver lobules showed a moderate fatty and hydropic degeneration without necrosis, while the cells in the center of the lobule seemed normal.

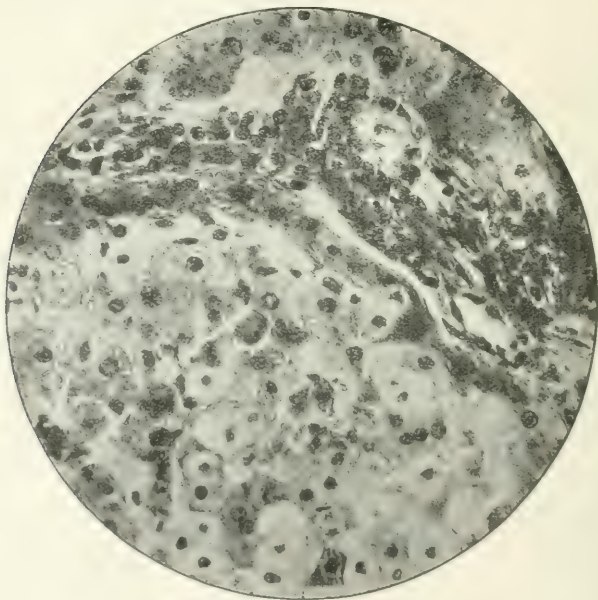


FIG. 7.—Liver of Eclampsia. Nephritic type. High power of Fig. 6, $\times 500$ diameters. Taken at periphery of lobule.

2. In a case of the hepatic type a section of whose liver is shown in Figs. 9 and 10, the fatty and hydropic degeneration at the periphery of the lobules was very marked and my first impression was that it corresponded to the focal necrosis described by Schmorl as occurring at the periphery of the lobule and was the important lesion of the liver. Further study of the center of the lobules, however, convinced me that the cells

there had lost their nuclei, that in fact they were necrosed cells and the most important lesion. In this liver then we had necrosis at the center of the lobule; a zone of fatty and hydropic degeneration near the periphery, and a few normal liver cells at the periphery along the portal vessels. I have seen several eclamptic livers with similar lesions.

The history of this case was briefly as follows: Mrs. M.,

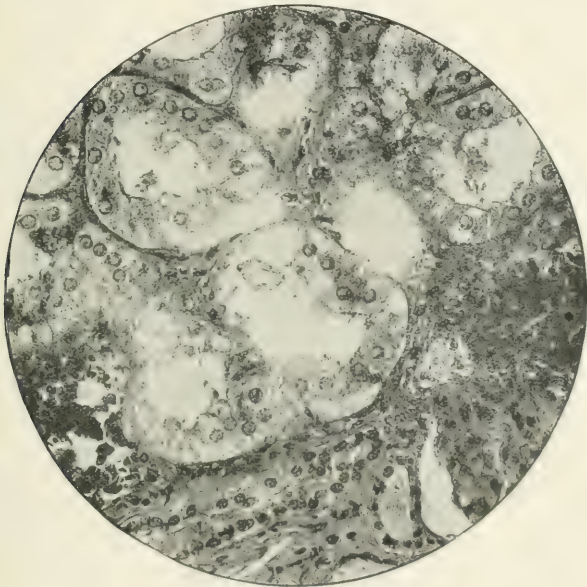


FIG. 8.—Kidney of Eclampsia. Nephritic type. Chronic diffuse nephritis.

age 19, twelve hours after a normal labor at the Sloane Maternity, suddenly turned in bed, called out "What's that?" had a convulsion; went from bad to worse; on fifth day vomited blood; died on the sixth day.

She had only a trace of albumin at any time; a few hyaline, epithelial and granular casts.

The relatively slight change in the kidney is well shown in Fig. 11, which represents the kidney of this same patient. The

section showed a cloudy swelling of the epithelium and a little degeneration, with markings less distinct than normal. Both clinically and pathologically the liver was more involved than the kidney and the case serves as an illustration of the hepatic type of eclampsia.

3. In the case a section of whose liver is shown in Fig. 12, a third variety of lesion of eclampsia is seen; an area of degener-

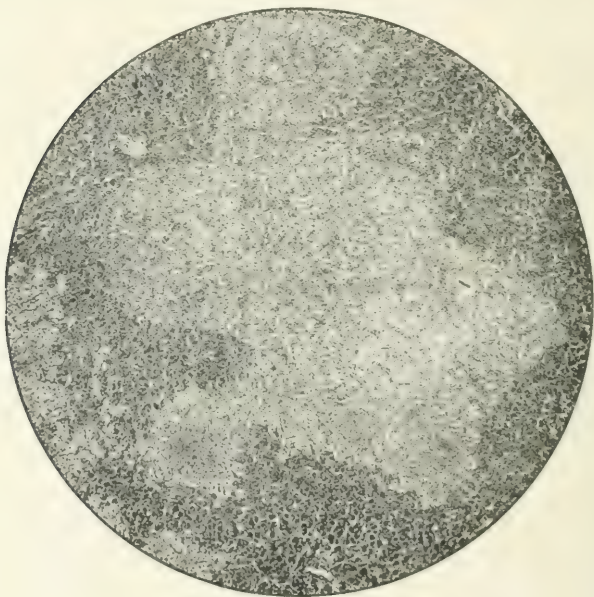


FIG. 9.—Liver of Eclampsia. Hepatic type.

ation of liver cells with hemorrhage, the so-called hemorrhagic hepatitis. In this case the lesion was situated at the periphery of the lobule, although another slide in my possession shows the hemorrhage near the center.

In many of these cases of the hepatic type, but not in all, thromboses are seen in the vessels at the periphery of the lobules. These have usually been described as situated in the branches of the portal vein, but according to Ewing they are usually

found in the small branches of the hepatic artery. It is well recognized that in eclampsia the myocardium often shows degeneration and the brain edema and hemorrhages, but these are less characteristic than the lesions in the liver and kidney and no further reference to them will be made in this paper.

In the nephritic type of eclampsia two classes may be recognized:

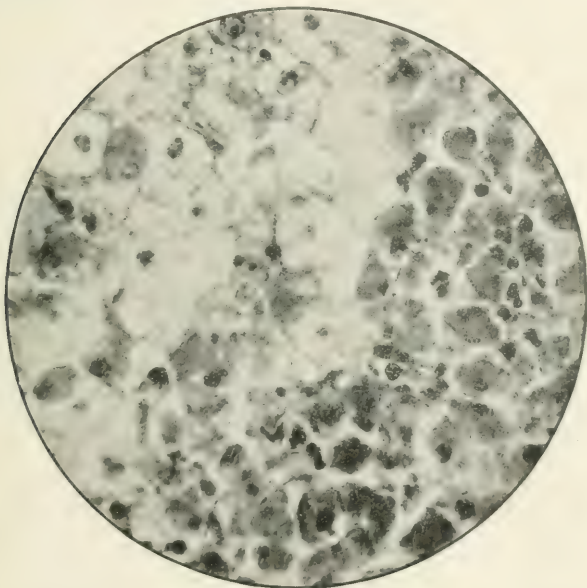


FIG. 10.—Liver of Eclampsia. Hepatic type. High power of Fig. 9, $\times 500$ diameters. Taken at periphery of lobule.

1. Those who have previously suffered with nephritis and in whom the eclampsia has developed an acute exacerbation of an old trouble.

2. Those whose kidneys have been previously free from disease.

The first class is illustrated by the case of Mrs. D., a section of whose liver and kidney is represented in Figs. 6 and 8 respectively.

She was brought to the Sloane Hospital in coma at 6.30 P. M., having had three convulsions before admission. Her urine was solid on boiling, and showed numerous casts. An elastic bag was introduced on admission and she was delivered about midnight. She had five convulsions between the time of admission and delivery, and two after delivery. She died on the third day. The kidney, see Fig. 8, showed a chronic diffuse nephritis with



FIG. 11.—Kidney of Eclampsia. Hepatic type.

the formation of new connective tissue; tubules dilated and epithelium largely degenerated; an acute exacerbation of a chronic process.

The liver seen in Figs. 6 and 7, is interesting as showing the early stages of the peripheral process which is shown in a latter stage in Figs. 9 and 10.

The second class is illustrated by the case whose kidney is shown in Fig. 13. The kidney lesion is that of acute toxic

nephritis. The cells are swollen and the tubules are filled with exudate and débris. Her history was briefly as follows:

She was fourteen years of age, had one convulsion before admission to Bellevue Hospital, was delivered almost immediately on admission and died four hours later.

The nitrogen partition as it occurred in the urine in four cases of the hepatic type and five cases of the nephritic type of eclampsia is as follows:

HEPATIC TYPE.

Ammonia Nitrogen.	Urea Nitrogen.	Amido Acid and Undetermined Nitrogen.
7.91%	81.40%	5.01%
9.39	77.	5.70
7.22	78.	9.30
9.54	64.70	16.70
Average 8.51%	75.27%	9.17%

NEPHRITIC TYPE.

Ammonia Nitrogen.	Urea Nitrogen.	Amido Acid and Undetermined Nitrogen.
3.32%	84.60%	7.08%
8.04	83.80	4.79
3.82	78.20	7.40
8.65	86.40	4.04
6.10	85.56	3.74
Average 6.16%	83.71%	5.41%

Although these cases are too few in number to warrant positive conclusions the figures show a marked resemblance between the hepatic type of eclampsia and the pernicious vomiting of early pregnancy, *i. e.*, ammonia nitrogen, amido acid and undetermined nitrogen above normal; urea nitrogen below normal. There is often also quite a resemblance in the hepatic lesions in the two conditions, *i. e.*, necrosed cells in the center of the lobule, cells with fatty degeneration near the periphery. In the nephritic type of eclampsia the nitrogen ratios varied but little from the normal.

As our experience with, and knowledge of the vomiting of pregnancy has increased the fact has become more and more impressed that while in the early months one may recognize vomiting as either toxic or reflex, the pernicious vomiting of the early months and all marked vomiting of the later months is certainly toxic.

Another illustration of advance in obstetric pathology is our knowledge of chorioepithelioma for which we are largely indebted to Prof. James Ewing of this city.

Regarding the pathology of puerperal infection our advance has been a better knowledge of the ease of conveying infection from infected vulva to sterile vagina, or from infected vagina to sterile uterus, and also the ease of changing an infection localized in the uterine cavity into a general bacteriemia by too vigorous endeavors with douche nozzle, fingers or curette to rid the uterus of its septic contents

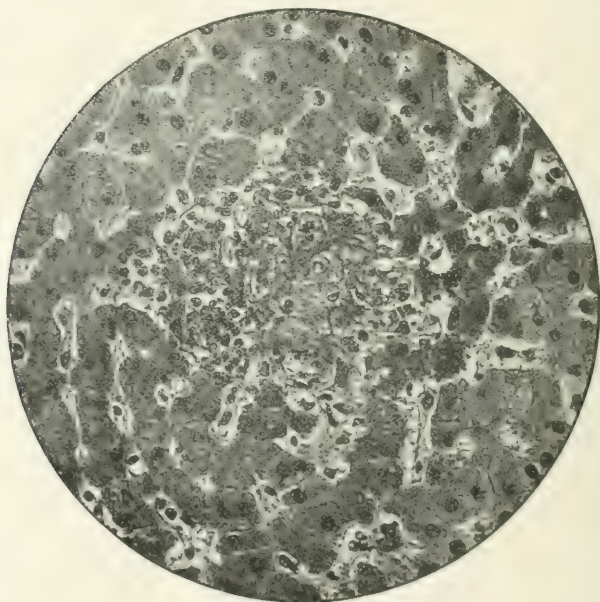


FIG. 12.—Liver of Eclampsia. Hemorrhagic hepatitis.

BETTER KNOWLEDGE OF THE MECHANICAL PROBLEM OF DELIVERY.

One of the greatest advances in practical obstetrics of recent times has been the study of the relative size of the fetal head and the pelvic canal, during the latter weeks of pregnancy. It is not now regarded sufficient to take the ordinary measurements of the pelvis and decide from these that there is room enough for the child to pass. Pelvimetry alone has brought

many disappointments. I remember distinctly two cases in private practice upon whom I was obliged to perform Cesarean section although their pelvic measurements were large and normal labors were expected. In both of these cases the obstruction was due to the curve of the lumbar spine and pelvimetry told me little.

Although there are many cases in which labor alone will

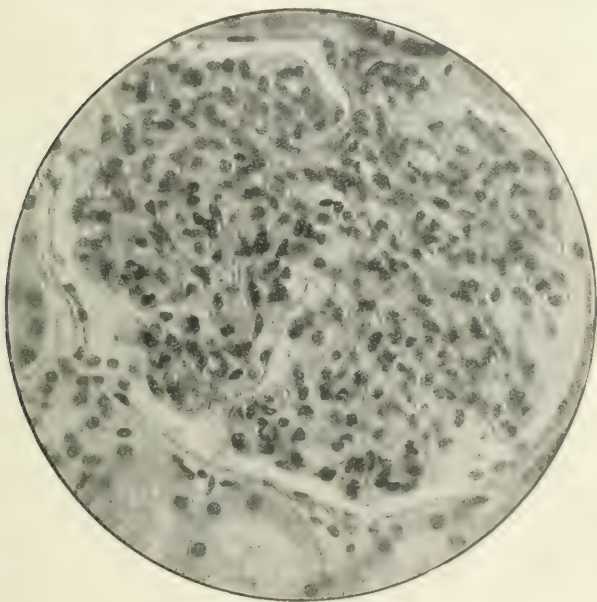


FIG. 13.—Kidney of Eclampsia. Nephritic type.

tell whether a full term child will pass through a given pelvis or not, still much has been gained by the method, pursued by most careful obstetricians to-day, of noting carefully during the latter part of pregnancy the size of the fetal head; measuring it perhaps by the method advocated by Stone and others, at any rate noting the ease with which it can be made to dip into the pelvis.

Another advance has been the early recognition of posterior

positions of the vertex and the relatively early anterior rotation of the occiput by the obstetrician when nature either fails to accomplish this, or endangers the life of the child by the tediousness of the process. The proper correction of this malposition implies several modern methods: careful watching of the fetal heart during labor; the cephalic application of the forceps as distinguished from the pelvic; and the use of the forceps as a rotator, a use formerly considered too dangerous, but now in skilled hands not only regarded as proper but not infrequently indicated.

BETTER PROCEDURE.

As compared with the past our better procedure to-day is based largely upon the two preceding divisions of this paper: Better knowledge of obstetric pathology and better knowledge of the mechanical problem of delivery.

Realizing as we now do the seriousness of the lesion in pernicious vomiting of pregnancy and realizing also how important a rôle is played by disturbed metabolism, we are no longer satisfied with the ordinary examination of the urine for albumin and casts and with the hypobromite test for urea. The patient may be dangerously ill yet albumin may be absent, casts few or none, and the hypobromite test entirely misleading. In these pernicious vomiting cases one does not feel in the light of modern obstetrics that he has done his full duty by his patient unless the urine has been examined by a chemist, the nitrogen partition determined and the presence or absence of acetone, diacetic or β oxybutyric acid, indican, and bile pigment ascertained.

It is well known that the practical starvation of the patient during the period of pernicious vomiting has much to do with the disturbance of the nitrogen ratios. Yet after two or three years' experience with the different danger signals of this condition, the writer feels that the degree and persistence of these disturbed nitrogen ratios in spite of treatment, studied in connection with the other urinary findings are certainly of value in determining the condition of the patient.

There is no one of the laboratory findings or group of findings which can be relied on exclusively for prognosis or indication for treatment. It is only when they are studied in connection with the clinical picture of the patient that our decision should be made. As to the treatment of pernicious vomiting of pregnancy, the writer believes that the best results are obtained by

colon irrigations, rectal feeding for a short time only, and early emptying of the uterus. Experience seems to teach that rectal feeding in these cases should not be relied upon for more than seven to ten days without marked improvement in the whole clinical picture.

Recent knowledge of chorioepithelioma demonstrates well the fact that prolonged menorrhagia and metrorrhagia following labor, abortion or operation for hydatidiform mole, should be looked on with suspicion and that early diagnosis and early hysterectomy alone give hope of satisfactory results in that dread disease.

In the treatment of puerperal infection our knowledge of the ease of spreading the infection has brought about one improvement in procedure, viz., the rule to keep out of the uterus unless it contains material which should be removed and if the removal of infected material is needed to do this with the least possible injury to the uterine wall so as to avoid opening new avenues of infection.

Frequent and careful observations on the size of the child's head as compared with that of the pelvic canal, especially in cases which have had a previous difficult labor, will often tell us the time beyond which pregnancy should not continue, and induction of labor two weeks before term will often secure a relatively easy and safe birth for a child which otherwise would be lost.

The careful observation of the changes taking place in the lower uterine segment, the flexion and dip of the child's head studied in connection with the probable date of impregnation, will usually enable one to determine fairly accurately when pregnancy has reached full term, and it may well be recognized as a good rule in practice that when full term pregnancy has once been reached its long continuance, save in a very roomy pelvis, is associated with grave danger to the child.

Although craniotomy is still recognized as a valuable procedure in the delivery of a dead child, or to save the life of the mother which would be jeopardized by other methods of delivery, improved methods of inducing labor at the proper time for a child to pass the given pelvis, and the low mortality of Cesarean section have largely reduced the number of cases in which craniotomy is considered justifiable.

The operation of pubiotomy is still *sub judice*. It will probably never have a large field in private practice, but in hospital sur-

roundings and in carefully selected cases, where Cesarean section is not clearly indicated, it gives promise of saving some children which would otherwise be lost. In cases of very rigid cervix, the so-called vaginal Cesarean section, either typical or some modification of it, is of value when speedy delivery is desired, yet mechanical dilatation seems impossible.

While calling attention to certain recent advances in obstetrics the writer wishes at the same time to emphasize the fact that not all that is new is better than the old. Some one has said "not all old things are good, not all old chairs are safe to sit on." Yet some old chairs are stronger than those made at the present day and some old rules in obstetric procedure are still safe guides for the general practitioner if not for the specialist.

It was formerly the rule to suture a lacerated cervix immediately after labor, only in those cases where hemorrhage was pronounced and not otherwise easily controlled.

Of late there has been growing a tendency to repair all marked lacerations of the cervix immediately after labor, with the hope of saving the patient future annoyance. Within a short time the writer has seen three cases of marked puerperal infection which he was able to assign to no other cause than the additional manipulation during, and the interference with drainage resulting from the immediate trachelorrhaphy.

That in proper surroundings, with good light and proper assistance, a well-trained man may repair with advantage a laceration of the cervix immediately after labor, is freely admitted, but the writer desires to sound the note of warning that without the presence of the above conditions, the morbidity if not the mortality of the patient is markedly increased, and for the general practitioner the safer rule is the old one—immediate trachelorrhaphy for hemorrhage only.

10 WEST FIFTIETH STREET.

THE DIAGNOSIS OF EARLY PREGNANCY

WITH REPORT OF ONE HUNDRED CASES AND SPECIAL
REFERENCE TO THE SIGN OF FLEXIBILITY OF
THE ISTHMUS OF THE UTERUS.*

BY

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(With Illustrations.)

THE question of the diagnosis of pregnancy is one which has been an object of investigation for medical observers of all times. The ancient writers from the time of Hippocrates and Celsus have all directed their attention to the subject. The vaginal methods of examination, however, have only come into use during the last century and brought with them the knowledge of new signs of pregnancy.

To make a decided diagnosis of pregnancy in the early weeks is one of the most difficult problems in medicine and one in which the physician's prestige with his patients may suffer the greatest shocks. It is a problem to which the physician should bring his most cautious efforts. Van Smieten, in 1718, said on the subject: "*Nunquam forte magis perclitatur fama medici, quam ubi agitur de graviditate determinanda: undique fraudes, undique saepe insidere struuntur incautis. . . . Omnes enim qui de graviditates signis scriperunt, quamvis longo artis obstetricæ usu celibres primis præcipue mensibus signa graviditatis satis incertum esse.*"¹

The question of pregnancy is one which must be solved before any operation upon a woman, and almost every operator has had the experience of finding, at operation, an unsuspected pregnancy. Unfortunate the surgeon who thus errs! He is held in execration by his patient and in derision by his colleagues. Yet the literature is full of such mistakes, although it is safe to say that the great majority are not published. Van der Veer,² in 1889, collected seventy-seven cases of abdominal section, in

* Read before the Philadelphia Obstetrical Society, Dec., 1906.

which unsuspected pregnancy occurred. In this list of seventy-seven cases, are many of the names of most distinguished gynecologists and surgeons of the world. From this it may be seen that the diagnosis of pregnancy is often one of no small difficulty and one which requires wide knowledge and great skill in gynecological examination. The subject was a favorite one for the early writers and they believed that a woman might know when conception had taken place.³ They also believed that various abdominal symptoms occurred, such as slight colicky pains in the region of the umbilicus, etc.⁴ This symptom was seen in some of my cases, but it also occurs just before menstruation.

The signs and symptoms of pregnancy are better divided into (1) those from the history, (2) breast signs, (3) signs on vaginal examination.

SIGNS FROM PATIENT'S HISTORY.

The symptom which most commonly brings a woman to the physician for an examination as to the probability of pregnancy is the suppression of the menstrual flow. This sign is of some value in certain cases; in others it is not. If a woman has been previously regular in her menstrual epochs and there has never been an alteration of the time of the period by more than one day, any cessation of menstruation is significant. But, if there has ever been any irregularity, the symptom is of no value.⁵ It is also to be remembered that many other causes may contribute to this cessation. This condition is often noted in young girls, particularly Irish girls, who have immigrated from a foreign country and whose menstrual periods are absent for several months after their arrival. During this investigation several such cases have been seen. Then again, it is said that the menstrual flow may be absent in newly married women or in those fearful of the results of wrongdoing. It is also to be remembered that many pathological causes may contribute towards this end, as anemia, tuberculosis, chilling, wasting diseases and their convalescence, premature menopause, etc.

An interesting and rather rare cause of cessation in menstruation has been pointed out by Axenfeld⁶ who recognized that tumors of the base of the brain, especially those which involve the hypophysis cerebri, are most commonly productive of cessation of menstruation. And it has been recognized that

acromegaly, especially in young persons, is likely to have complete amenorrhea as one of its first symptoms. Cessation of menstruation often declares itself before any other symptom of acromegaly can be observed and usually is treated in many ways before the hopelessness of the condition with the advance of nervous manifestations is observed.

These observations were confirmed by many writers, amongst them Cushing⁷ who showed that sexual infantilism, involving complete absence of menstruation, was a complication of tumors affecting the hypophysis cerebri. The menstruation may have been delayed at puberty or, if established, not infrequently completely disappears. It may also be noted that certain cases of concussion of the brain are followed by prolonged disturbance of menstruation and sometimes by cessation for many months. As a large proportion of these cases were young unmarried women, the importance of the condition is evident.

These facts were also confirmed by Serafino Patellani⁸ who collected and analyzed 145 cases of acromegaly in women with reference to its relation to the sexual functions. The altered function is especially demonstrated by arrested menstruation. He concludes that amenorrhea is not simply a symptom of acromegaly, but bears a causal relation to it. Pregnancy may occur with acromegaly; but lactation will hasten the progress of the disease. The amenorrhea may be the result of the atrophy of the uterus due to lactation. The disease occurs especially between the ages of twenty-one and twenty-five years and more frequently in virgins and sterile married women. The course in these is more rapid.

The symptom of amenorrhea is also misleading from the fact that a woman who is pregnant, may have some slight bloody discharge at the time the menstrual flow should have come, and speak of this as a menstruation. This flow is not uncommon at the first or second epochs, and is usually of a thin, serous character, and only tinged with blood. It seldom appears after the third month.

Pregnancy may also take place during the physiological amenorrhea of lactation or in those who are in the habit of missing periods. It is stated by Karl Heil,⁹ in a study of 478 lactation periods, that there were 234 (48.9 per cent.) with menstruation present during lactation, so that about half of all nursing women menstruate during lactation, and, as the number of pregnancies increase, the tendency to menstruate

increases also. Thus it will be seen that the absence of menstruation during lactation is not a reliable sign. It is also to be remembered that it is possible for girls to become pregnant without ever having menstruated. Many such cases are reported by Stein,¹⁰ Sieber,¹¹ Montgomery¹² and Tanner.¹³ This is said to be a common condition amongst the Turks.

The value of the menstrual signs of pregnancy is also lessened by the fact that menstruation may be delayed, as in a case reported by Hirst and Fox.¹⁴ This woman had no menstrual flow until her thirty-fourth year, then menstruated spontaneously three times. After five months more of amenorrhea she became pregnant. Wolfe¹⁵ also gives the history of a woman who married at thirty-four, menstruated at forty-five, conceived and was delivered at forty-six years. The first bleeding followed upon a fright. So that it may be said that, while the absence of menstruation in a woman of previous regular menstrual habit, is of some value as a symptom of pregnancy, it may also be significant of many other conditions and is an unreliable and uncertain sign of pregnancy.

Nausea and vomiting is the next most common symptom in the history of pregnant women. It may occur in the morning and is usually regurgitative in type, but varies in onset, duration and severity between very wide limits. The time of its onset is uncertain. Montgomery relates a case of a woman who was married Saturday, had morning vomiting on Monday and was duly delivered of a child in nine months.

In an excellent study of the nausea and vomiting of pregnancy in 300 cases, Giles¹⁶ found that 45 per cent. of all pregnant women are exempt from vomiting during the first three months. It is least frequent between the ages of twenty and twenty-five years and 90 per cent. of primiparæ over twenty-five years suffer from sickness. It is least common in the third pregnancy, and women who menstruate painlessly suffer less from sickness of pregnancy. The "morning sickness" is most common during the second month, although three-quarters of all cases of vomiting begin to do so in the first month. Morning vomiting also occurs in many other conditions than pregnancy, as chronic gastritis, nephritis, in pelvic disorders, etc. So that it may be seen that, as only half of all pregnant women have this condition in the first three months, and as it may occur in other conditions than pregnancy, the symptom of morning vomiting cannot be considered a reliable symptom of pregnancy.

BREAST SIGNS.

In this division only those conditions which appear before the third month will be considered. Montgomery's description of the breast signs of pregnancy remains classic. When conception has taken place and the menses have been suppressed for one or two periods, the woman generally becomes sensible of an alteration in the state of the breasts in which she feels an uneasy sensation of throbbing or of stretching fulness by soreness and tingling pains about the center of them and in the nipple.

There is considerable variety in regard to the effect of breast changes in the early weeks. But in some cases they are manifested very soon after the first menstruation is missed. Swelling and pain of the breasts in some women, however, accompany the return of each menstruation.

The primary areola of pregnancy was described by Roederer¹⁷ and later by Montgomery,¹⁸ whose name has been given to the follicles. The skin surrounding the nipple is soft and turgid. Little glandular follicles or tubercles, as they were called by Morgagni,¹⁹ are softened and raised around the nipple. The color of these follicles is of a deep shade of rose or pink, slightly tinged occasionally with a yellowish or light brown hue. These glandular follicles number from twelve to twenty, and project a little above the surrounding skin. In dark women the pigmentation is greater.

The time of pregnancy at which this phenomenon manifests itself varies very much, but usually it is about the ninth week.

SIGNS ON VAGINAL EXAMINATION.

The diagnosis of early pregnancy must, after all, depend upon vaginal examination. The conditions caused by pregnancy of growth and increased vascularity of the uterus must first have their effect upon the uterus itself and the pelvic organs. The changes may first be expected in the uterus itself, then in the vagina and adjacent parts. The signs of pregnancy which are recognized by vaginal examination are usually said to be: purplish hue of the cervix, softening of the cervix, compressible isthmus, alterations in the size, shape, and consistency of the uterus and intermittent contractions of the uterus.

With the hope of being able to put the diagnosis of pregnancy upon a more exact and scientific basis, the study of the con-

ditions and value of pelvic signs was undertaken. There were in all 100 cases of pregnancy examined. The duration of the pregnancy was calculated from the date of the last menstruation. This may cause a mistake in the calculation of the length of time of pregnancy, but it is the only date which can be absolutely fixed.

Great care was taken in the examination of these women in order that any tendency to error might be avoided. The diagnosis in the early weeks is one which must depend upon exactitude and skill in vaginal examinations. It is of the greatest importance that the bladder should be emptied. If any urine remains within the bladder, it is impossible to appreciate any minor changes in the size, shape and consistency of the uterus. The fundus cannot be accurately outlined and the intermittent contractions of the uterus cannot be felt.

The waist bands should be loosened and the patient in good position with the hips well elevated upon an examining table or a hard bed. If necessary, a board should be put under the bed. The operator should be in an easy position and one in which he may be able to hold his examining hands perfectly still over a period of minutes in order to properly appreciate the intermittent uterine contractions. The length of vaginal examination should extend over sufficient time to recognize two contractions of the uterus with the intervening relaxation. This is usually from five to ten minutes. If the patient is upon an examining table, one should rest one's foot upon a stool or step, and the arm upon the thigh in order to have proper control of one's hand. If the patient is upon a bed, the elbow may be rested upon the mattress. In this way, it is possible to take all muscular strain off the examining hand and more delicately appreciate any of the more minute pelvic changes. The greatest possibility of error is in making too hurried an examination and in finding a uterus in one phase of its contraction or relaxation, so masking other signs.

The 100 cases reported were almost all catheterized before examination. They were all examined over a period of five to ten minutes, and the cervixes were usually examined through a vaginal speculum.

The table of 100 cases and the percentage in which the various signs were found has been arranged with reference to the various weeks of pregnancy, which in every case were reckoned from the last present menstruation.

The cases are arranged in regard to the duration of pregnancy and to the number of times each sign was found. No case was included in the series, unless the author was convinced that it was a pregnancy, and not some condition simulating it. When Hegar's sign, the intermittent contractions of the uterus, softening of the cervix, and the sign of flexibility of the lower uterine segment were present, the diagnosis was considered exact.

TABLE OF 100 CASES.

<i>Week of Pregnancy</i>	5	6	7	8	9	10	11	12	13	Total
<i>Number of Cases</i>	6	8	12	12	15	15	12	12	8	100
<i>Enlargement of Uterus:</i>										
Symmetrical.....	0	4	9	3	9	3	9	11	5	53
To the left.....	2	1	2	3	3	6	2	0	2	21
To the right.....	4	3	1	6	3	6	1	1	1	26
<i>Softening of Uterus:</i>										
Symmetrical.....	0	4	9	3	9	3	9	11	5	53
On the left.....	2	1	2	3	3	6	2	0	2	21
On the right.....	4	3	1	6	3	6	1	1	1	26
<i>Jacquemin's sign:</i>										
Slightly.....	0	2	3	6	9	4	2	4	4	34
Markedly.....	0	0	0	3	0	6	6	4	4	23
Absent.....	6	6	9	3	6	5	4	4	0	43
<i>Hegar's Sign:</i>										
Moderately.....	2	6	6	6	9	8	4	3	1	45
Definitely.....	2	1	3	6	6	7	8	9	7	40
Absent.....	2	1	3	0	0	0	0	0	0	6
<i>Cervix Blush: Present</i>	2	1	3	6	0	10	10	12	8	61
" " Absent.....	4	7	9	6	10	5	2	0	0	39
<i>Cervix Softening:</i>										
Present.....	2	2	6	6	8	12	10	12	8	66
Absent.....	4	6	6	6	7	3	2	0	0	34
<i>Intermittent Contraction: Pres.</i>	3	6	12	12	10	13	11	12	8	88
" " Absent.....	3	2	0	0	4	2	1	0	0	12
<i>Flexibility of Lower Segment:</i>										
Definitely.....	2	6	8	9	12	12	10	10	8	76
Moderately.....	2	2	3	3	4	3	2	2	0	21
Absent.....	2	0	1	0	0	0	0	0	0	3

Jacquemin's Sign.—This sign of bluish tinge of the vaginal mucous membrane is one which was first taught in 1837 by Jacquemin.²⁰ In the examination of 4,500 prostitutes in compliance with police regulations of Paris, he observed that this violet hue of the vagina was present very early in cases of pregnancy. Duchatelet²¹ mentions his investigations upon the subject and notes the accuracy of the sign. Kluge,²² professor of midwifery at Berlin, was also an advocate of the sign, although priority in the matter seems to belong to Jacquemin. Sommer²³

studied the sign under Kluge, convinced himself of its accuracy and reported Kluge's results. The sign came in for a great deal of criticism at first, but was finally accepted by the profession as accurate and exact.

It is usually, and was by Jacquemin, spoken of as the violet hue or blush of the vagina. It extends up to the cervix and involves the vulva. The sign is usually said to be present by the second or third month.

In this series of cases, it was found that this hypertrophy of

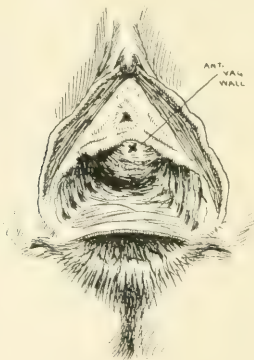


FIG. 1.—Jacquemin's spot.

the vessels and venous congestion of the vagina occurred first at a spot upon the anterior vaginal wall about 2 cm. below the orifice of the urethra. This spot later enlarged to spread the violet hue over all the vagina. This spot, called by the author Jacquemin's spot (Fig. 1), did not at first show upon the surface of the mucous membrane; as the mucous membrane here has creases and crevices, the sign was seen as streaks of livid, bluish purple at the bottom of these furrows. The phenomenon may best be seen at its first appearance by separating the labia and stretching the mucous membrane of the anterior wall, so that these creases may be opened and the engorged veins exposed.

As will be seen from the table, the sign was observed in 57

per cent. of the 100 cases before the thirteenth week. In 43 per cent. it was absent. It was absent in the very early weeks of pregnancy, present slightly from the seventh to the tenth week and commonly after the tenth week. As pregnancy advances, it is present in a greater proportion of cases and, after the thirteenth week, is a very reliable sign.

Weissenberg,²⁴ in a study of the lividity of the vagina, found that, in 106 examinations, the livid aspect was present in 5 at the fifth week, 1 at the second, 10 at the eighth, 7 at the twelfth. It was slightly present in 2 at the fifth, 13 at the sixth, 10 at the seventh, 6 at the eighth, and 3 at the tenth. It was absent in 5 at the fifth, 20 at the sixth, 4 at the seventh, 6 at the eighth, 6 at the tenth, and 2 at the fourteenth week. In other words, in 106 cases the vagina was noticed markedly livid in thirty-one cases (28.3 per cent.), slightly livid in thirty-six cases (33.9 per cent.), and absent in thirty-nine cases (36.7 per cent.). It was more frequently present as pregnancy advanced. Thus it will be seen that Weissenberg's findings are very similar to those of this investigation, where the sign was marked in 23 per cent., slightly marked in 34 per cent., and absent in 43 per cent. of cases of pregnancy under thirteen weeks.

BLUSH OF CERVIX.

The violet hue of the cervix uteri usually is a more satisfactory sign than that of blush of the vagina. It is, as a rule, more definite and more frequently found. The changes in the uterus can usually be depended upon to extend and show in the cervix before they appear in the vagina. All these cases were examined with a bivalve speculum and in a good light. The cervical blush was noticed in 61 per cent. of all cases and was absent in 39 per cent. It was, as was the vaginal sign, more definitely present as pregnancy advanced. At the eighth week, it was present in half the cases, at the tenth week in two-thirds and, in all after the twelfth. Thus it may be seen that it is a more reliable and accurate sign of pregnancy, than is the blush of the vagina.

SOFTENING OF THE CERVIX.

This sign is one which is frequently referred to in text-books as a most reliable one. A common simile is that the cervix of

the nonpregnant uterus is as hard as the cartilage of the nose, while the cervix of the impregnated uterus is as soft as the lips.

The softening of the cervix was noticed in about the same proportion as the blush of the cervix. It was present in 66 per cent., and absent in 34 per cent. It was present in increasing proportion with the advance of pregnancy. The sign, as may be seen from the table, was not reliable until after the tenth week.

The softening of the cervix seemed to occur from without inwards, that is to say, the mucosa became congested and soft, and the hard cone of cervical tissue could be felt with the softened outer layer. The cervix, then, increased in softness throughout.

These signs of change in color and consistency of the vagina and cervix are not readily caused by any congestive condition, save pregnancy, and are very reliable in its diagnosis, after the twelfth week of gestation. Before that time they are unreliable, although offering strong corroborative evidence. .

CHANGES IN UTERUS.

It is natural to suppose that, as the growth of the physiological tumor occurs in the uterus, it is here that the first changes caused by gestation may be felt. It is usually the case that uterine enlargement may be felt by the educated hand as the earliest sign of pregnancy. This enlargement usually is evidenced in one or other part of the fundus. In the very early weeks (five to eight), this enlargement is not accompanied by complete softening of the uterine tissue, but it is somewhat softened with scattered hard spots or islands of firm tissue (Fig. 2), giving an impression, not unlike a soft uterus with small, firm, nodular fibroids.

This enlargement and softening progresses equally and is quite often placed towards one or other uterine horn. It is more frequent to find this asymmetry confined to one or other horn of the uterus in the earlier weeks; and, as time progresses, the uterus becomes more and more symmetrical, so that after the ninth week it is uncommon to find it other than symmetrical. Dickinson²⁵ first noted this asymmetry in early pregnancy and referred to it as causing a furrow or fold, dividing the body of the uterus into separate prominences. He also alluded to a denser spot of uterine tissue, which he believed to be the site

of the ovum. His first communication was in 1892,²⁵ and was followed by others in 1893²⁶ and 1901.²⁷ This asymmetry was also investigated and described by von Braun²⁸ and in a monograph by Piskacek²⁹ who made a study of 145 cases.

The asymmetrical enlargement of the uterus in the early weeks of pregnancy may almost become a distortion and may give rise to errors of diagnosis, the consequences of which are

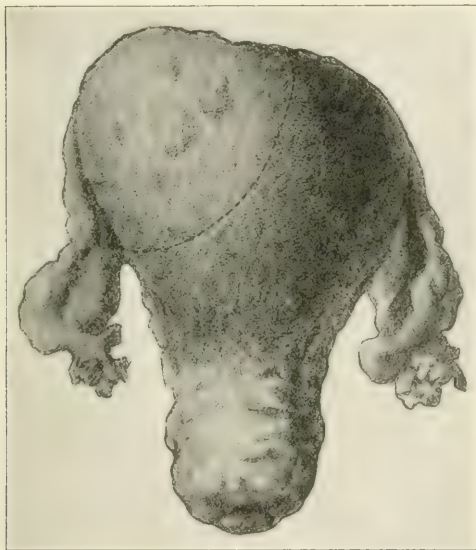


FIG. 2.—Asymmetrical enlargement of the uterus.

sometimes grave. It has sometimes been likened to a face swollen from an inflamed tooth and gives a different sensation to the hand than the part which is not hypertrophied. A common type of this condition is shown in Figure 2. On palpation, it seems as if a tumor is annexed to the uterus and it has been, on occasion, diagnosed as tubal pregnancy. The body of the uterus preserves its habitual firmness, while the cornual

part, usually involving all the uterus to the mid-line, offers great contrast by its flabbiness. It may almost feel fluctuating or cystic, although this is not the rule.

This form of asymmetrical enlargement may be found in many degrees of which "angular" pregnancy is the extreme. The distortion is not usually so marked, however, nor is the feeling of fluctuation common. The enlarged part usually gives a sensation of doughy softness with isolated hard spots. Peuch³⁰ has described the extreme type of this condition, in a report of fifteen observations, four of them personal, in which this phenomenon developed eight times on the right and seven times on the left. This irregularity in the uterus constitutes only a temporary phase, which disappears with the progress of gestation.

This type of change in the uterus in the first weeks of pregnancy has also been described by Lequeux.³¹ He states that it is not uncommon and claims that it is due to attachment of the ovum in the neighborhood of the tubal opening. Piskacek also describes various forms of irregular changes in shapes of the uterus and explains them as caused by the site of the growing ovum.

It has been said by Dickinson, Peuch and others, that a groove or furrow exists between the softer enlarged part and the harder, firmer part of the uterus. The author has never been able to satisfy himself that such a groove exists, but thinks that this belief is due to the sharp edge of the firmer part. The firm and soft uterine tissue lies side by side and the examining hand passing along the fundus causes a depression in the soft tissue when leaving the hard edge.

The author also cannot convince himself that the denser spots described by Dickinson and believed by him to be the site of the ovum, are anything more than the ordinary uterine tissue in the progress of being softened by the growing congestion and vascularity of pregnancy. As a proof of this, these hard or denser spots are more commonly felt in the very early weeks of pregnancy and, as pregnancy advances, they disappear into the common softness.

This enlargement of the uterus (Dickinson's sign) was felt to be symmetrical in 53 per cent. It was seldom symmetrical before the seventh week, and more commonly symmetrical after the tenth week. In other words, as pregnancy advances, the uterus becomes more and more symmetrical. The enlarge-

ment was to the right in 26 per cent. and to the left in 21 per cent. When the uterus was symmetrically enlarged, it could not be judged whether the enlargement was anterior or posterior, save in one case where the enlargement is markedly posterior.

Softening of the uterus is a sign which should be taken with that of symmetrical or asymmetrical enlargement. It occurred in this series in the same proportion of cases, *i.e.*, 53 per cent. symmetrically, 21 per cent. on the left and 26 per cent. on the right side. This softening usually takes the character, as has been pointed out by Dickinson, Von Braun and Piskacek, of an elastic doughiness, often with firm, isolated points or buttons. The firm part of the uterus is unchanged and, from the soft part being larger and more easily palpated, gains the impression of an increase of density.

Weissenberg,³² in his interesting study of the difference in consistency of the two halves of the uterus, noted the softness on one or other side and never symmetrically. In 108 examinations he found that the left half was softer in seventy-three cases (67.9 per cent.), while the right half was the softer in thirty-five cases (33 per cent.). The discrepancies between the percentages of the two sides were more marked in the earlier weeks when the left was much more frequently softer. The author of this paper, however, believes that the enlargement is not always to one side or the other, as Weissenberg has it, but that it is sometimes central, anterior or posterior, and is felt bimanually as a symmetrical enlargement.

A very marked finding in the present study of 100 cases was the great increase of softness and vascularity in the uterus in proportion to the amount of enlargement which was noted in eight cases of retroflexion. The softening of the uterus and the amount of lividity of the cervix was greater in these cases of early pregnancy with retroflexion, than it was in proportion to their uterine enlargement, and than it was in comparison with the cases of early pregnancy with antelexion with a history of the same duration. This increase in softening is supposed to be due to the increase in congestion caused by the retroposition.

The enlargement and softness of the uterus often joined with a marked thinning of the uterine wall. This is not, however, the rule, although it is not uncommon.

The consistency of the uterus should be judged during an interval of relaxation, when the softness and enlargement may be properly appreciated. If it is judged during a contraction,

the increase in firmness caused by the muscular contraction masks the real conditions (*vide infra*).

It has been thought by Dickinson, Von Braun and others, that the harder, firmer side of the uterus represents the side of the gestation, while Hubl, Schauta and Landau believe that the softer side is the location of the pregnancy. The author is inclined to the latter view. In one case of pregnancy interrupted for pernicious vomiting at the third month, the gestation was located upon the softer side.

INTERMITTENT UTERINE CONTRACTIONS.

Uterine contractions were studied by Braxton Hicks and reported by him in 1871.³³ These contractions had, however, been recognized before by Ingleby,³⁴ in 1836, who pointed out that "in advanced pregnancy the uterus, when moderately grasped or rubbed, slightly hardens independently of actual labor and almost instantly regains its yielding condition." Oldham,³⁵ in 1856, pointed out that this power of contraction of the uterus might be taken as a trustworthy characteristic of pregnancy, for he states that the large gravid uterus alters in a marked manner under the influence of pressure, from a condition of flaccidity to one of tension "assuming a tense rounded form and becoming firm and resisting." Oldham believed that no other condition than pregnancy was able to produce these uterine contractions. This was attacked by Tanner³⁶ who, while believing in the value of the sign, reported cases of uterine contractions from large fibroid polyp and vesicular mole. Tanner, however, believed that in pregnancy or other enlargement of the uterus by a substance in its cavity, there existed "a regular peristaltic movement, consisting of slight contractions and dilatations."

It remained, however, for Braxton Hicks³⁷ to put the subject upon a definite basis and bring it before scientific men. He claimed that the sign was of use in the diagnosis of pregnancy and also reported instances of contractions from other causes than pregnancy.

Braxton Hicks studied these contractions of the uterus only after the organs could be palpated abdominally. He claimed that the sign was of use after the fourth month of pregnancy, that is, only after the uterus could be palpated through the abdominal wall.

It cannot be too emphatically stated that *these contractions of the uterus are present or may be excited throughout pregnancy and that they are a very valuable sign of early pregnancy.* Thus Lindbloom,³⁸ in 1891, showed that a change in consistency of the uterus occurred in early pregnancy after manipulation and massage bimanually with the finger-tips.

These contractions are a constant accompaniment of pregnancy and occur whenever the uterus is irritated or stimulated by massage. The manipulations of the fingers in vaginal examination are usually sufficient to cause a uterine contraction, so that by the time the examination is made, the contraction has taken place. The contraction may last some time, usually from one to three minutes. A stage of relaxation or softening then follows, when the bimanual signs of pregnancy may best be elicited. The contraction involves the whole uterus, including the lower uterine segment and the cervix. The cervical involvement is well shown in a report by Johnson³⁹ of intermittent hardening and softening of the vaginal portion of the cervix, with a change of color from a pale violet to a normal pink hue or the reverse. He states that this condition, as seen through a speculum, is a valuable sign of pregnancy prior to the third month.

These contractions of the uterus come and go during an examination, hence they are called intermittent; but there is no means of discovering whether they occur intermittently in early pregnancy without a stimulus, as the entrance of a speculum is sufficient in itself to cause contractions. It is, however, probable that they do so occur; for Braxton Hicks and others have noted that, in the later stages of pregnancy, more or less continuous intermittent uterine contractions without known stimuli do exist.

The phenomenon of contraction in early pregnancy gives a curious sensation to the examining hands. The soft uterus is felt, then a change is noted with a hardening of the uterine tissue as if the uterus was "crouching." It is a similar sensation to that given by a small animal, as a guinea-pig, suddenly crouching under the palm, while held on a table. The uterus apparently becomes shorter and firmer. All parts of the uterus are involved in the contraction including the lower segment and cervix, as has been shown by Johnson.

It is the fashion to describe these uterine contractions as regular and irregular and state that they may involve only one-

half or part of the uterus. The author has not been able to recognize such distinctions, but, from these cases, considers that, when a contraction involves one part of the uterus, it involves the whole. It sometimes seems, owing to a marked softening and thinning of one part of the uterus, that the contraction is irregular, but this is because the uterine wall is thinner at one part and manifestly cannot contract with the power of the thicker part, and, also, the softer tissue beneath may make the contracted and thin part of the uterus appear less firm. The contractions may, however, vary considerably in intensity in the same uterus and at the same examination.

It is of the utmost importance to consider these uterine contractions in the diagnosis of early pregnancy, not only on account of their diagnostic importance, but also on account of their effect upon the other pelvic signs of pregnancy. For this reason it is necessary in the examination for early pregnancy that the bimanual examination should extend over sufficient time to allow the note of a cycle of contraction and relaxation of the uterus, and preferably two cycles. It is also necessary that the examining hands may be held quiet for some time, so that the movement and irritation, incident to bimanual examination, may not cause the uterus to pass from one contraction to another with only a short period of relaxation.

It has been said that cervical manipulation will excite uterine contraction more easily than massage or manipulation of the fundus, but the latter has been most successful in this investigation.

The vaginal fingers are held in the anterior fornix and the abdominal hand steadies and rubs the fundus against the palmar surfaces of the lower fingers.

In this study of 100 cases, the sign of intermittent uterine contractions was found to be a most valuable corroborative one. It was noted in 88 per cent. of the cases and was not elicited in 12 per cent. These twelve cases were examined in the early part of the study and five of them in the fifth and sixth week of pregnancy. With increasing appreciation of this sign and skill in its elicitation, it was very constantly found.

Uterine contractions may be present in other conditions than pregnancy. They may be present in any condition which distends the uterine cavity and causes a marked congestion. It has been felt in vascular uterine fibroids of fair size, but no case can be found in which a fibroid or fibroid polyp of such size, which

could be mistaken for an early pregnancy, caused uterine contractions. It may be present in congestive conditions of the mucous membrane; it is sometimes felt on the day before menstruation is established. It was felt by the writer in one case of extrauterine pregnancy in which a large cast of uterine decidual tissue was afterwards passed. However, in spite of these possibilities, the sign remains one of the best corroborative signs of pregnancy. It should not, nor should any single sign be thought sufficient evidence upon which to base a diagnosis of an early pregnancy.

SOFTENING AND COMPRESSIBILITY OF THE ISTHMUS—HEGAR'S SIGN.

This sign is one of the most popular ones and was first described by Reiml⁴⁰ from Hegar's clinic. He described the sign as a softness, compressibility and alteration in the lower uterine segment at that part directly above the insertion of the sacro-uterine ligaments. He advised that the sign could be best elicited by one finger in the rectum. He claimed that the sign could be found in the first month of pregnancy.

The phenomenon was afterwards described and investigated by Landau,⁴¹ Hegar⁴² and others, and was found to be a most reliable and accurate sign of early pregnancy. It is now commonly elicited by placing one or two fingers in the anterior vaginal fornix and the upper or abdominal hand upon the posterior surface of the uterus and attempting to make the finger-tips of each hand meet. A striking absence of resistance is noticed and well-defined compressibility is found.

The value of the sign depends upon the recognition of certain conditions. If the uterus is in a state of contraction, it is impossible on account of the firmness of the isthmus to obtain this compressibility. The firmly contracted uterus moves as one body and the sensation of lack of resistance is not felt. If the abdominal wall is firm, as is not uncommon in nulliparæ, it is difficult to press the upper hand far enough down to obtain the sign. A thick abdominal wall or tender pelvic organs may also complicate the procedure. It is impossible to obtain the sign when the bladder is full.

In the very early weeks of pregnancy (five to eight weeks) the uterus is as a rule more contractile and irritable than in the time following this, when the tissue is softer, the muscle flabbier

and the organ more readily handled. For this reason in order to obtain the sign in the very early weeks, the author used the following method: After the examining hands were in place with two fingers in the anterior fornix and the abdominal fingers gently steadying the fundus, the hands were held quiet until a uterine contraction had passed. Just after the rigidity of the uterus had waned, the lower fingers were pressed upwards and forwards almost in the direction of the umbilicus. When the sign was present, there was a sensation of relaxation as if the fingers were pressing upon an elastic band which slowly stretched. (Figs. 3 and 4.) This maneuver is the more easily done, because the cervix in early pregnancy usually lies more in the axis of the vagina, than it does in the nonpregnant. In this way a more acute angle is made by the corpus and cervix of the uterus which allows the fingers to be placed in the angle



FIG. 3.—Hegar's sign. Uterus in normal position.

of the isthmus. It is believed that this maneuver increases the value of the sign in the very early months.

Hegar's sign was obtained in this way in 94 per cent. of the 100 cases. It was obtained definitely in 49 per cent. and moderately well in 45 per cent. It was best obtained from the ninth to the twelfth week of pregnancy.

This sign, while it is of great value in pregnancy, is also obtained in a number of other conditions. Once, while doing routine autopsies, the author did a postmortem upon a coroner's case of chloral poisoning in a young woman. The uterus was as large as a fourteen weeks' pregnancy and very soft. There was marked thinning of the lower uterine segment and Hegar's sign of pregnancy could be readily demonstrated. The uterus was excised and shown to the class of students as an early pregnancy and the method of obtaining Hegar's sign pointed out. What was the demonstrator's chagrin to find that the uterus on section showed only a soft vascular myomatous tumor! The friends were communicated with and it was found that, the tumor suddenly growing noticeable to the woman, she had consulted her family physician who, finding Hegar's



FIG. 4.—Hegar's sign in retroversion.

sign, pronounced her pregnant. In her distress, believing herself illegitimately pregnant, she committed suicide by taking chloral. The family physician's mistake convinced the writer of the grave consequences sometimes dependent upon a diagnosis of pregnancy and incited him to investigation of the subject, whereof this paper is the result.

Other conditions besides myoma may cause such alteration

in the uterus and give Hegar's sign. It is sometimes present just after the puerperium and during lactation.

However, such conditions which may simulate Hegar's sign are usually ones which are not likely to be confused with pregnancy and may usually be excluded in the diagnosis. Thus the history of hemorrhage or profuse menstruation in myomatous tumor usually differentiates this condition from pregnancy and this is rendered more distinct from the fact that the type of soft vascular myoma, which may be confused with pregnancy, usually causes free bleeding.

The sign, however, remains one of the most valuable and accurate signs in diagnosis of early pregnancy.

SIGN OF FLEXIBILITY OF THE ISTHMUS.

This sign also depends upon the softening and vascularity of the uterine tissue connecting the cervix and corpus of the uterus. It was suggested by the frequency with which the cervix, which usually in the nonpregnant is at an angle and more or less across the axis of the vagina, comes to lie directly in the axis of the vagina. This is due to the softening of uterine isthmus and the pressure of the vaginal walls.

To obtain the sign, conditions of examination must be ideal. The patient must be upon a hard surface, as a table, and the waist bands loosed. The bladder must be empty. One hand is placed upon the abdomen and the tips of the fingers press against the posterior part of the fundus. The palmar surfaces of the fingers in the vagina rest against the posterior aspect of the end of the cervix. It is important to note that no contraction is occurring as the uterus must be in a state of relaxation. The fingers of both hands are then pressed together (Fig. 5), as if in the attempt to make the fundus and the cervix meet. The fundus and cervix then come easily towards each other as if the isthmus of the uterus was a well-oiled hinge.

The fundus is pressed downwards towards the pubes and the cervix is drawn forward and upward towards it, as if in the endeavor to make the tips of the fingers of the vaginal and abdominal hands to meet. The uterus may be often completely doubled upon itself in this way, although the flexibility of the isthmus is, in itself, an expression of the sign.

This maneuver requires some little practice and some experi-

ence in the firmness of the isthmus of the unimpregnated uterus. It can, however, be as readily learned as Hegar's sign.

In retroversion the sign may be obtained by pushing the cervix backwards toward the fundus. The increased vascularity of the retroverted pregnant uterus will often allow the cervix to move back and forward upon the corpus like one arm of a flail.

This sign has been said to be a new form of Hegar's sign and it undoubtedly does depend upon the same essential causes as does Hegar's and all other signs of pregnancy, *i.e.*, the increased vascularity and growth of the pregnant uterus. Hegar's sign, however, is definitely stated to be the softness, compressibility

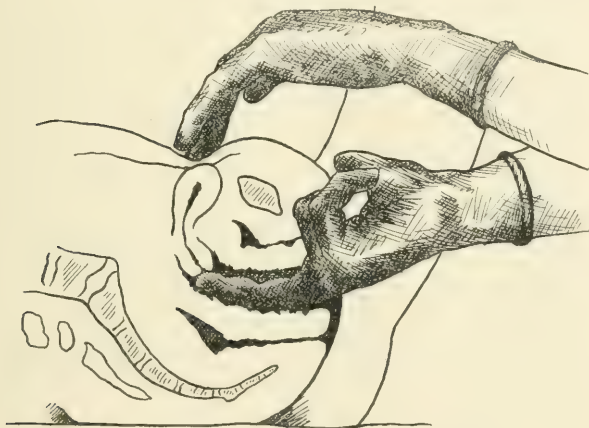


FIG. 5.—Sign of flexibility of the lower uterine segment.

and thinning of the isthmus ("... Weichheit, Nachgiebigkeit und Verduennung des unteren Uterussegments"), and the sign of flexibility of the isthmus is sometimes obtained even before there is thinning or compressibility. The vascularity, which causes both signs, allows flexibility before compression and thinning of the lower uterine segment.

The ease with which the cervix and fundus may be made to almost meet, is at first astonishing. Very little practice is

required and after one demonstration students usually are able to obtain the sign.

This sign was present in 97 per cent. of the cases; in 76 per cent. it was definite, and in 21 per cent. it was moderately well obtained. It was absent in 3 per cent. Thus the sign has apparently about the same value as has Hegar's sign.

Other signs of pregnancy are taught as the "jug" sign in which the body of the uterus is likened to the bulging part of a jug, while the cervix is the spout. This sign depends upon enlargement of the uterus so that it may cause a noticeable protuberance or bellying. This does not usually occur until the third or fourth month, so the sign is not of great value in the early weeks when the enlargement is slight and often asymmetrical.

Ladinski⁴³ has recently drawn attention to a spot upon the anterior wall in the median line just above the junction of the cervix where a marked change in consistency is said always to occur. This spot is said to be elastic and fluctuating in character. In the 100 cases here reported, softening of the uterus occurred symmetrically in 53 per cent. and, in 47 per cent., it was asymmetrical and to one side of the median line. The tendency was as growth continued for the softening to become more symmetrical. After the tenth week this median softening may no doubt be felt, but before that time the softening may be cornual or elsewhere, as has been shown by the studies of Dickinson, Von Braun, Piskacek and the author.

Other signs such as pulsation of the uterine artery⁴⁴ and pulsation of the vaginal arteries have been suggested, but they have no constant value, although they are of use in corroboration of the diagnosis.

It cannot be too emphatically insisted upon that the diagnosis of pregnancy must depend upon no single sign, but upon the conjoined evidence of a number of signs. Success in this diagnosis will advance coordinately with knowledge of the signs and skill in the examination. No result can be obtained save in examination under the best auspices upon a table or a hard bed and with the bladder empty. It seems trivial to insist upon these things, but this precaution is very commonly neglected.

The signs of inspection of the vagina offer very reliable evidence before the third month, but they are not of great use before the eighth week. At that time, blush and congestion of the vagina and cervix are present in about half the cases.

The diagnosis of early pregnancy must, after all, depend upon the changes wrought in the uterus by the growing ovum. Amongst these changes the most suggestive is irregular enlargement, symmetrical or otherwise. This condition of growth of the uterus is essential to a diagnosis of early pregnancy. Intermittent contractions, while they may exist in other conditions, are the most valuable of the corroborative signs. These contractions may constantly be felt if the conditions of examination are proper and the examination is conducted skilfully.

The signs of compressibility and flexibility of the isthmus are of great value in the diagnosis of the condition and, taken with intermittent contraction and uterine enlargement and softening, allow of a positive diagnosis being made in the early weeks of pregnancy.

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HIGH RECTOCELE AFTER PERINEAL REPAIR.*

BY

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(With Seven Illustrations.)

FULL-SIZE outlines plotted from the ano-rectal canals of living subjects and the charted topography of certain bulging recto-vaginal septa some months subsequent to plastic work on the pelvic floor have served to indicate to the writer some of the reasons for rectocele, and for the percentage of his failures.

The factors in the production of rectocele seem to be:

1. Laceration or lack of tone in the fascia and muscles of the pelvic floor.
2. Injury to the muscular layers of the rectal wall, or defective activity of such layers.
3. Defects in conformation of the rectum, or in the axis of the rectal canal, or of the anal canal, or both.
4. Obstruction from vigor or irritability of the sphincter.

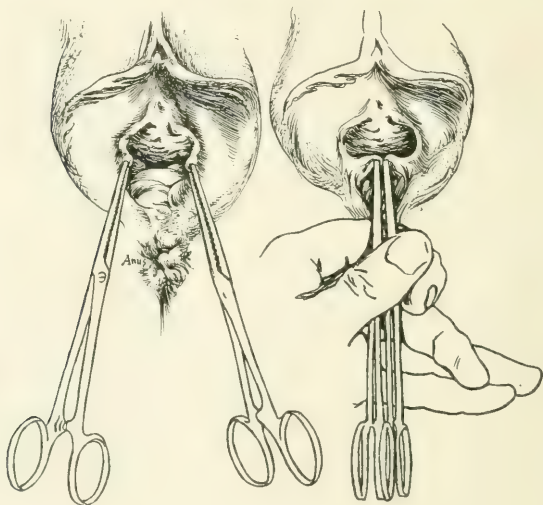
Postmortem observation of the configuration and tonicity of the rectal and anal canals is inconclusive because death effaces many data. Anesthesia, also, relaxes and falsifies. It is only on the living patient that form and direction may be studied fairly, and these are the methods:

(1) The rectum is distended with air and viewed with specula, either in the knee-chest posture or in the lithotomy posture with lowered head; (2) by digital touch; (3) by tracing tape or wire—the resultant measurements and angles being plotted on a full-size sketch.

With loosened waist bands, in the knee-chest posture, a tubular rectal speculum is passed. Say it is five inches long and a scant inch in outside diameter, and bears a mark at every inch. At three inches its tip is seen to impinge on a large valve, whose left edge is just at the left margin of the opening. One makes this mental note. The inner opening of the speculum swings two of its diameters to the right before reaching the lateral

* Read before the New York Obstetrical Society, December 10, 1907.

rectal wall. These are two sample measurements. To record them a rectangle 1 x 5 inches is drawn on the history card to represent the speculum tube. Then one enters the two topographical marks noted above, one at the left margin, three inches from the lower end, the other two diameters (two inches) to the right of the right hand line. Five or six points thus determined give a definite outline, lateral and antero-posterior.



FIGS. 1 and 2.

The visual findings are confirmed by the rubber-covered finger, the patient lying on her back. Passed slowly through the anus to study the sphincter, two phalanges are next hooked forward to estimate the position and resistance and thickness of the recto-vaginal septum and perineal pyramid, both quiescent and under strain. Thus the ballooned rectum can be plotted, and an idea obtained of what distention will do to its walls, and where the weak or unsupported points are. Resistance to the tubular speculum on the part of the sphincter calls for a smaller tube, such as the largest Kelly tubular cystoscope.

The ordinary rectal bivalves exhibit little more than anal mucous membrane, and are mostly painful to use.

If one wishes to make a more complete record the lead tape or solder wire is laid along the median contour of the pelvic floor from mons to sacrum. Little slides run on it. These are to be stopped opposite certain points, such as coccyx, anus, fourchette and the crest of the rectocele. A loop is run up into the vagina to determine its axis or follows the curve of the pro-

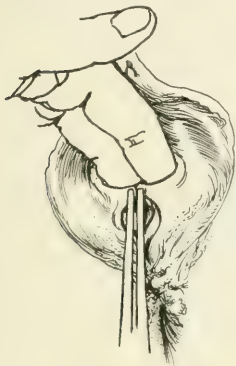


FIG. 3.

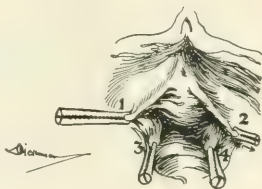


FIG. 4.

truding septum. A tracing from this tape or wire furnishes the basis on which the antero-posterior section is built up from the first two sets of observations. These measurements and methods are chiefly of scientific interest. The practical clinical point of them is that without digital rectal study of the septum no idea can be gained of the extent of the repair required.

PREVENTION OF OCCURRENCE OF HIGH RECTOCELE AFTER OPERATION.

- I. Digital rectal examination of septum before anesthesia.
- II. Identification of structures at operation, and high apposition.
- III. After-care.

I. At the examination in the office or clinic where the pelvic floor injury is recognized (or on the table *before* anesthesia), the conditions of the recto-vaginal septum and the fascial and

muscular conditions must be looked for. It cannot be done after the woman is under ether and all the structures are flabby. Our failures come largely from trying to guess, with a patient's tissues flaccid, what the muscles awake in pelvic floor and rectal wall will do. The gloved hooked forefinger must drive forward on this rectal wall and gain knowledge of its functional activity. Study of individual cases will put an end to some of our discontent with results. I own to being far from a hundred per cent. content with mine.

II. Having determined before giving ether how high up the weak spot on the septum extends, and where the muscle edges

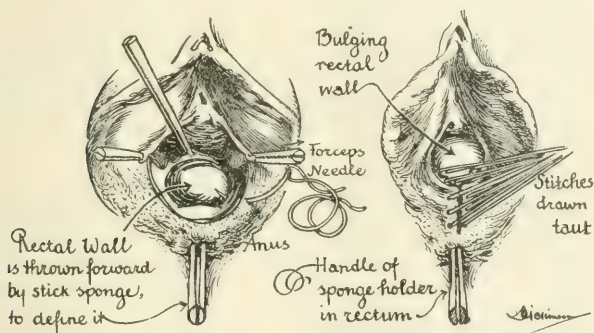


FIG. 5.

are, we must have a handy method, first, to *estimate the amount of denudation required*, and, second, after denudation, to differentiate rectal wall from fascia edge and muscle bundle. To size up the surface to be made raw no method heretofore proposed seems to me to be better than this. A Kocher artery clamp seizes the lowest recognizable end of the hymen on one side; another seizes the other side. The tips of the two are brought together over two fingers laid in the introitus. The seizures are shifted until a snug fit is obtained. The pair of clamps is then dropped, remaining in place. A second pair makes the same two-finger-two-clamp test, seizing the lateral walls of the vagina. A fifth clamp catches the furthest spot on the rectocele, if needed. The knife sketches the outline of the area to be denuded, running from clamp tip to clamp tip, median to the tips. After denuding, the clamps may be removed

or the outer (hymen) clamps may be retained to open up the vulva.

To differentiate fascia edge and muscle bundle from rectal wall the following procedure works well and is safe from contamination, as the guiding finger in the rectum never can be. Also, it gives a more rotund bulge to the rectal wall than the finger-tip. A gauze ball sponge on a sponge holder (usually called "a stick") is passed into the anus and is pressed forward by an assistant in such fashion that the rectal wall bellies forward. Right and left of this hemisphere one searches, as the assistant alternately pushes up and drops back his stick sponge,



FIGS. 6 and 7.

for the exact edge where rectal wall is no longer mere rectal wall, to know the line where the needle must pass. The upper edge of a sound sphincter is readily found, but the lateral structures, withdrawn toward the tuber ischii for years, are shy and elusive. The stitches are placed, clamped long and laid aside. When the upper stitches have been placed, but *before tying any*, the stitches are drawn upon so that the raw surface is closed over. Now comes the real test. The ball sponge in the rectum, simulating the lower end of the fecal column, tries to press past and climb over the obstruction placed by the taut stitches. If it cannot, neither will the battering ram of constipation. If the sponge eludes the upper line and readily pouches thin recto-vaginal septum over the top of the new defenses, we must denude higher.

If the whole barrier yields, no fascia and muscle have been drawn inward,

III. *After-care*.—The woman who is endowed with strong muscle and taut fascia, whose injury is recent, whose peristalsis is trustworthy, and whose trunk girdles are not worn too snug, will need no special warning. Walking in two weeks and working actively in four and intercourse in six will cause no damage. Among four classes, however, a good operation may fail of permanency because of neglect to lay down special regulations and definite dates.

1. Women over fifty, or those of any age whose tissues are over fifty. The old scar yields. Very moderate, repeated strains cause it to give way.

2. Women coming to us with pelvic floors atrophied, whether from severe injuries or long postponement of repair or general flabbiness—these furnish no bulk wherewith to build adequate barriers, or else no rubber quality to give and come back under stain.

3. Those with chronically ballooned rectums.

4. Those with resistance at the anal opening.

The special precautions demanded for pronounced cases of the above groups are as follows:—

(a) Prolonged convalescence; three or four weeks on bed or couch or easy chair.

(b) A daily evacuation, of soft consistency, and without straining: say by means of a four to eight ounce oil enema at bedtime, to be retained until morning.

(c) Low intraabdominal tension, for three months, by avoidance of snug corsets, whether straight-front or other, or health waists, tight bands or heavy skirts, and care in bending or stooping or straining when wearing any waist constriction.

(d) Overcoming of irritability or sensitiveness or undue vigor of the sphincter, and watchfulness against blockade where there is an anal canal at an acute angle to the thrust of the rectal fecal column.

FISTULA BETWEEN THE FUNDUS OF THE UTERUS
AND THE UPPER PORTION OF THE INTESTINE.
OPERATION; CURE.

BY

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THE report of the two interesting cases of trauma of the uterus by Dr. J. B. Sutton, in the December number of *THE AMERICAN JOURNAL OF OBSTETRICS*, has suggested to me the propriety of reporting the following unusual case. Its interest lies chiefly in the remarkable cure which nature provided in the face of a formidable accident.

The patient, a woman of thirty-eight, was attended by an unskillful physician at the birth of her ninth child. The history of the delivery is obscure, but from what could be learned it was evident that the physician in charge ruptured the uterus with his obstetric forceps, and caused a portion of the intestines to prolapse into the vault of the vagina before the child was delivered. A section of the bowel was evidently removed. Eventually the child was delivered dead and the patient recovered with no very serious symptoms, excepting that feces were discharged through the vagina.

I was called to see the case six weeks after delivery of the child. The patient was extremely emaciated and delirious from the effects of drugs. The vagina and a considerable area of both buttocks were intensely macerated, and so exquisitely tender that the patient had been kept under narcotics. She was taken at once to a hospital, and after a few days of treatment of the vagina and buttocks, an examination was made in the Sims position. The cervix was found deeply lacerated, and a sound passed into the uterine canal could be made to enter the intestine through an opening in the fundus. There was no recto-vaginal fistula, and water injected into the rectum did not return through the vagina. The liquid contents of the dejections, their very strong digestive power, as seen by the extreme maceration of the vagina and buttocks, and the occasional passage of clear bile, made it sufficiently evident that a fistula

existed between the fundus of the uterus and the upper portion of the small intestine. This diagnosis was also borne out by the progressive emaciation and loss of strength which the patient was apparently undergoing.

On May 24, 1907, I performed abdominal section and found the following condition. A mass of intestines was matted together in the left pelvis by adhesions, which were thoroughly freed with very little damage to the intestinal wall. It was found that the intestine had been completely severed at a point less than two feet from the duodenum. The upper end of the intestine passed directly into the upper portion of the left broad ligament, and was attached cleanly to the uterus just below the left horn. On detaching the bowel from the uterus it was found that the intestinal canal communicated with a smooth round opening about 2 c.c. in diameter, which entered the canal of the uterus. The lower segment of the bowel was completely sealed and was attached to the lateral wall of the false pelvis by adhesions several inches away from the end of the upper segment. A drain was passed through the fistulous opening into the canal of the uterus and down through the vagina. The broad ligament was then closed over the opening so as to shut it off completely from the peritoneal cavity, all raw surfaces being covered by peritoneum. An end-to-end anastomosis was then made between the severed ends of the bowel, and the abdominal wound closed with the exception of a small rubber drain, which was removed in thirty-six hours. The patient was put on a light diet with nutritive enemata twice a day, and had a large normal movement of the bowels the second day following the operation. Convalescence was uneventful, and the patient made an eventual perfect recovery with a complete restoration to her former weight and strength.

395 BEACON STREET.

VALUE OF BLOOD OBSERVATIONS IN GYNECOLOGICAL CASES.*

BY

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MANY articles have appeared recently dealing with the relation that should exist between the practising physician, or surgeon, and the clinical laboratory man. Many of these writers express a fear that the laboratory man has too much voice in determining the diagnosis.

Surely it cannot be a sign of ignorance that the physician, or surgeon, who formerly gave his opinion after asking a few questions regarding symptoms, and noting the pulse, temperature and general appearance, should now reserve his diagnosis until he has received the report of the microscopist on the blood or body secretions and excretions.

Since the time of Pasteur, surgeons have treated most of their cases either by the introduction of antiseptics or by excision of the diseased area. The laboratory man has demonstrated that many of these diseased bodies can be restored to a healthy state by raising the body resistance. Let us hope that he shall continue his good work until "mutilating" surgery shall become a thing of the past.

To say nothing of treatment, no one with any actual experience of the difficulties of diagnosis presented by many cases will question the advantages which have accrued from laboratory methods. In the short time given this paper it is our intention to present the conclusions of some 300 blood observations made in the Gynecological Ward of the Samaritan Hospital.

Normal blood findings vary with diet, exercise, hot and cold baths, starvation, etc. This normal variation was nicely demonstrated in a recent case. The family physician referred a nineteen year old girl to the ward for the removal of what he termed pus tubes. The leukocytes were found to number 12,000,

* Read before the Philadelphia Obstetrical Society, November 7, 1907.

but bimanual examination revealed a three-months pregnancy and no diseased condition.

Cyanosis, due to general or local causes, purging, hemorrhage, injections of large quantities of normal saline, etc., are some of the causes of error in blood examination.

Negative blood findings cannot always be considered in determining the diagnosis; for instance, a well encapsulated abscess will not give the expected leukocytosis.

Positive blood findings, on the other hand, are of great value, not only by determining the hemoglobin and number of cells in typhoid, sepsis, tuberculosis, and malignant disease, but by blood cultures determining the bacteriological cause of the disease.

For many surgeons a hemoglobin of 50 per cent. contraindicates operation. In this series some six or seven cases exhibiting a hemoglobin of 30 to 40 per cent. have been successfully operated upon. Where this low hemoglobin is due to hemorrhage, thrombosis should be anticipated and the proper preventive treatment instituted. It would seem wise to operate in such cases only after considering the general condition of the patient in conjunction with the hemoglobin percentage. A hemoglobin of 60 or 70 per cent., accompanied by jaundice, is a greater risk than a hemoglobin of even 20 to 30 per cent., following hemorrhage.

Operation was delayed as long as possible in a patient of fifty-two years suffering from fibroid uterus, which extended to the umbilicus and weighed seven pounds after its removal, because the coagulation time of the blood was eight minutes and the urine contained sugar, although the patient exhibited none of the symptoms of diabetes.

In this case the hemoglobin was 65 per cent. and the patient had been in good health until eight weeks previous, when uterine hemorrhage became alarming. Operation was delayed also in a case of hypertrophic endometritis with a blood report of hemoglobin 60 per cent., red blood count 2,500,000, white blood count 5,400, and coagulation time 1.50, because of the woman's evident debilitated condition, lack of strength and the short coagulation time.

Cases of chronic inflammation are more apt to be accompanied by a low hemoglobin percentage than those of acute. Uterine fibroids and hypertrophic endometritis, exhibiting marked anemia with low hemoglobin and count, have been kept under observation, the bleeding controlled, and given a liberal diet, together with one dram of expressed beef juice every two

hours. This treatment always improves the hemoglobin and enables us to give a much better prognosis.

Since these observations were conducted in a gynecological ward most of them were upon "pus cases." Where such factors as diet, pregnancy, baths, etc., are eliminated and the technic carefully carried out the wide latitude of from 6,000 to 10,000 leukocytes for normal blood, as given by many authors, is not borne out by our findings. According to Dr. DaCosta, "Absence of leukocytosis, or a slight increase, may be either of very favorable or of very grave significance, inasmuch as these signs both occur in trivial and overwhelming infections."

A very important step in determining the white blood count is the differential count. Not infrequently a leukocytosis so low as 9,000 or 10,000 will show a decided increase in the percentage of polymorphonuclears. Such a blood finding is diagnostic of pus with low body resistance. The blood serum of such a case will exhibit a low body resistance as compared with control serum from a healthy individual.

On the other hand, a decided leukocytosis of 20,000 or 30,000, accompanied by a slight increase in the polymorphonuclears, clearly indicates a mild infection with active resistance. This was well shown in a patient exhibiting a temperature of unknown origin, white blood count 20,000, and polymorphonuclears 67 per cent. After a few days of vain search a small pus sac whose presence had not been suspected was discovered in the scalp under a wig.

A high leukocytosis, with decided increase in the polymorphonuclears, means severe pyogenic infection with good resistance. Improvement in the patient's condition will be marked by a decrease in the polymorphonuclears and white blood count. If the white blood count decreases with an increase in the polymorphonuclears the pyogenic infection is overpowering the resistance.

It must constantly be borne in mind in using blood reports as an aid to diagnosis that many medical conditions, as pneumonia, scarlet fever, erysipelas, meningitis, etc., present a leukocytosis and an increase in the percentage of polymorphonuclears.

In this series sarcoma of the ovaries, carcinoma of the ovaries, cervix uteri and body of the uterus, have been accompanied by leukocytosis. Cases of anemia, especially those caused by hemorrhage from abortion, uterine polyps, or fibroids, and convalescent cases of acute infection, have shown a decided increase in the clotting powers of the blood. The coagulation time of

normal blood varies with different observers and different coagulometers. Wright's coagulometer in our hands has given the normal coagulation time as two minutes thirty seconds, to two minutes and forty-five seconds. In cases of anemia and those recovering from an acute infection, coagulation usually takes place in about one-half the normal time. Carcinoma of the uterus is accompanied by a somewhat prolonged coagulation time. The exhausting hemorrhage characterizing these cases may partially be accounted for by this lengthened coagulation time, as well as the erosion into small blood-vessels. In our observations upon typhoids Dr. Illman and I were able to demonstrate clearly that hemorrhage in typhoid is preceded by a decided lengthening of the time of coagulation. All cases of carcinoma have shown a prolonged clotting time, and it is natural to infer that hemorrhage in carcinoma is due largely to the blood condition.

The calcium salts and glandular extracts exerted little or no influence on the clotting time of these patients or other patients exhibiting a long coagulation time. In one case of alarming uterine hemorrhage suprarenal extract seemed to control the bleeding.

On August 21, coag. 5.50; given suprarenal ext. gr. iiss q. 3 h.

On August 22, coag. 4.00; hemo. 30%; R.B.C. 2,000,000;
W.B.C. 7,400.

On August 23, coag. 2.30.

Routine observations on the coagulation time have brought to our notice many cases with quick clotting and enabled us to take proper precautions to prevent postoperative thrombosis. Every effort is made to increase the blood volume to normal by advising free drinking of water, hypodermoclysis, etc., so as to prevent the absorption of the body juices into the general circulation.

As stated above, Wright's coagulometer is the instrument used. The method of determining the time of coagulation consists in drawing equal amounts of blood into glass tubes of the same caliber, noting the time each tube is filled, keeping them at a known temperature and noting the time on blowing out the contents of each tube. When one is reached which leaves a small firm clot on the white filter paper, the time required for that clot to form is taken as the coagulation time of the patient's blood; 37° C., or blood heat, may be taken as the temperature

at which the tubes are kept, but such a high heat usually produces very quick clotting—too quick for accurate observations. Half blood heat, or 18.5°C ., is the temperature most often employed and was the temperature we used in determining the normal time to be 2.30 to 2.45.

Within the past eight months six cases of tuberculosis have been observed in this ward. In four of these cases the peritoneum was involved; in one the Fallopian tubes, and in one the endometrium. In the first five the diagnosis was confirmed by celiotomy and in the sixth by microscopical examination of the shreds of endometrium. Every case gave a low hemoglobin percentage and red blood count. The white blood count ranged from 4,000 to 5,500.

Such a leukocyte count in a patient exhibiting a temperature and complaining of pelvic and abdominal symptoms was of decided diagnostic value. Taken alone such a blood finding might readily enough suggest typhoid, but the temperature course and results of physical examination are very different from those of tuberculosis. While two of the cases of peritoneal tuberculosis were under observation and we were keenly on the alert for the proverbial third to make its appearance, a patient was admitted running a constant temperature with slight morning remission; the abdomen was distended, etc. In this case the Widal was unmistakably positive and the leukocytes numbered 20,000. The laboratory findings suggested typhoid fever with perforation and such a condition was found on performing a celiotomy.

In three of the cases of peritoneal tuberculosis the opsonic index was studied. In each instance it was found pointing to a low body resistance. The index was .56, .63 and .69, *i. e.*, the patient's serum influenced the washed corpuscles to take up in one case .56 as many tubercle bacilli as the control serum caused the corpuscles to take up; in the other two cases .63 and .69 respectively.

It is interesting to note that the fluid obtained from the peritoneal cavity on examination gave a much lower opsonic index than the serum of the blood obtained from the finger-tip. This finding sustains Wright's contention that cure often follows evacuation of this fluid because it is replaced by a serum of higher opsonic index or greater resistance to the tubercle bacillus. It may be mentioned that one patient was given tuberculin T. R. with apparent benefit. There was a gain in weight and improvement in the general condition.

No wise surgeon will base his diagnosis or course of action on the blood examination alone. In conjunction with clinical features and the history, blood findings are of great value, both for diagnosis and prognosis. This is especially true in inflammatory conditions. In not a few instances has the leukocytosis and increase in the polymorphonuclears determined the pelvic mass to be a pelvic abscess and not a ruptured ectopic gestation.

2721 LEHIGH AVENUE.

DYSTOCIA FROM VENTRAL FIXATION.

BY

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SINCE Keoberlè, in 1869, first intentionally did a ventral fixation of the uterus for a retroversion, and even more, since Leopold, in 1887, brought forward the operation of attaching the fundus of the uterus directly to the abdominal wall, the behavior of these cases during pregnancy and labor has been a source of interest and anxiety to obstetricians. The experience has now become so ripe (396 cases gathered from the literature by Andrews in 1905 with thirty-eight more by Williams in 1906) and the conclusions, as to the dangers of ventral fixation in the childbearing period of a woman's life, so evident, that the operation is fast being forsaken.

It is not to be denied that in numerous cases of ventral fixation pregnancy has later occurred and the woman passed through labor in a practically normal way. However, the following six cases from the clinics of obstetricians in this borough show the serious type of dystocia, that may follow the operation. The first two cases have been previously reported.

CASE I.—*Dr. Dickinson. Ventral fixation for prolapse. Version. Embryotomy. Rupture of the uterus. Sepsis (prior to her coming under the doctor's care). Death.*

Autopsy showed a right-sided tear from external os to cornu, splitting the right broad ligament. The fundus was fixed to a scar behind the pubes; the anterior wall was two inches thick, the posterior wall thin and relaxed.

CASE II.—*Dr. Dickinson. Ventral fixation for retrodisplacement. Cesar an section. Death.*

A toxic pregnancy. Labor for several hours with attempts to drag the cervix down from its position high up at the second lumbar vertebra. A long cervix with a four inch cervical canal. Anterior wall one and one-half inches thick. Failure to bring cervix down. Cesarean section. Twins. Torsion of the uterus with the chief development in the right lateral wall of the uterus. The right appendage being high in front and the left down on Poupart's ligament. Death from shock twelve hours later.

CASE III.—*Dr. Polak. Ventral fixation for prolapse. Cesarean section. Recovery.*

Mrs. H. C., aged thirty-three. Married. Two children, both difficult births. Prolapse of the uterus followed her last accouchement. Was operated by a general surgeon three years before. Cervix amputated, anterior and posterior wall repaired and the uterus suspended by three through-and-through silk-worm sutures, which were left in place for three weeks. Operative result good, became pregnant in 1904. Suffered constant pain and dragging in the abdominal scar after the fourth month of gestation. Seen in November, 1904, abdomen very pendulous, child in a left scapular anterior position. Two days later she fell in labor, advised to await dilatation before deciding on the mode of delivery. At the end of ten hours of inefficient pains the cervix was the size of a silver dollar, but could only be reached by passing the whole hand into the vagina, the anterior wall of the uterus from the point of fixation at the abdominal wall to the anterior lip of the cervix formed a thick shelf, blocking the pelvis, making it impossible for the head to come down. Several attempts were made to enter the uterus via the cervix, but its high posterior position and the thickness of the anterior shelf made a vaginal delivery impossible. A Cesarean section was decided on and done. The abdomen was incised at the level of the umbilicus, and the uterus found firmly adherent the whole length of the old scar. The entire distention of the uterus was of the posterior wall. The uterine incision was made in the median line posterior to the fundus, and a living child extracted. Iodoform gauze drainage run through the cervix. Uterine wound closed with interrupted sutures, buried by a Lembert of the peritoneum.

CASE IV. *Dr. Polak. Ventral fixation for retroversion. Cesarean section. Recovery.*

Mrs. D., aged thirty-five. Married one year. Had always

been delicate. Since puberty had suffered from menstrual and intermenstrual pain in back and left side. In 1895 her left ovary was removed and the uterus suspended. She was well until marriage when she became pregnant and developed a mild toxemia evidenced by hyperemesis during the early months. She entered the service at the Methodist Episcopal Hospital March 1, 1907. At this time she was in the thirty-sixth week of her pregnancy. Her pelvic measurements were normal. There was a trace of albumen and a few hyaline casts in her urine. The child was lying transversely with the head to the left. The uterine wall appeared particularly thin and failed to contract under stimulation. She was put to bed on a restricted diet, and her kidney condition improved. On March 29, she started in labor. The pains were irregular and inefficient during the night, and practically no progress in dilatation was made. On examination the vagina was found drawn up in folds longitudinally, and the cervix located six and three-quarter inches from the vulvovaginal orifice, pointing backward and upward toward the fourth lumbar vertebra. Here again as in the former case the anterior uterine wall from the point of abdominal fixation was markedly thickened, and formed a distinct shelf across the pelvis. After eighteen hours of labor with no gain a Cesarean section was done through a four and a half inch abdominal incision, and a longitudinal incision through the posterior fundal wall of the uterus. A living child weighing six and seven-eighths pounds was delivered. Considerable difficulty was experienced in getting the uterus to contract and retract as the posterior wall remained as a distended flaccid pouch after the sutures were introduced. Finally under ergot, manipulation, and intrauterine tamponade which was carried through the cervix into the vagina the bleeding was controlled. The mother made an uneventful recovery and left the hospital on the twenty-first day.

CASE V.—*Ventral fixation for prolapse. Difficult version.*

Seen in consultation with Dr. Ross Matheson and afterwards delivered by Dr. Paul Pilcher. No. 20,392, M. E. H. Admitted April 22, 1904. Multipara, aged thirty-four. Other labors difficult instrumental. Ventral fixation eight years before for prolapsus by three chromic gut sutures placed on the fundus and posterior wall of the uterus and carried through peritoneum, fascia, and muscle. No pregnancy from that time till present pregnancy. Slight edema and nausea through

the first months. No pain. Nothing further till labor began twenty-four hours before admission. Pains strong but ineffectual. Examination showed a transverse presentation with a moderately retracted uterus. Vaginally the cervix was found high up and posterior, the anterior lip impinging on the promontory, soft, admitting one finger. Bimanual revealed a firm band of adhesions from uterus to abdominal wall and below this a shelf of firm uterine tissue blocking the way to delivery. She was dilated manually and a difficult version accomplished. The delivery of the head required the application of forceps. A slight tear in the cervix, and a moderate tear of the perineum were repaired at once and mother and child made an uneventful recovery.

CASE VI.—*Ventral fixation for prolapse. Cesarean section. Recovery.*

Seen by Drs. Dickinson and Pomeroy, delivered by myself. No. 27,076, M. E. H., aged thirty-seven. Ninth gravida. Operation ventral fixation Jan. 2, 1901, for cystocele, rectocele, and retroversion. Three chromic gut sutures were placed in fundus and posterior wall of the uterus through peritoneum, fascia, and muscle. When admitted had been in labor twelve hours with no progress. Examination showed the position of the child to be left sacroanterior. The cervix was high up, the external os at the promontory. A shelf composed of the anterior wall of the uterus and cervix blocked the entrance of the breech into the pelvis. Cesarean section Dec. 31, 1906. Five inch median incision, two-thirds above and one-third below the umbilicus. Fundus bound down to the abdominal wall by a band of adhesion three inches long and three-quarters of an inch wide covered with enlarged veins. Median longitudinal incision in the uterus on posterior wall. An eight pound and eight ounce female child extracted, in good condition. Hemorrhage controlled by holding the fundus forward and downward, the great relaxation of the posterior wall being a troublesome factor. Two layers of sutures were placed in the uterine wall, and one in the peritoneal covering. The tubes were removed and the stumps buried, this being conditional to permission for operation. Uneventful convalescence. Home on the twenty-first day.

The pathology of these six cases is quite uniform with that of other published cases. The fundus and more or less of the anterior or posterior wall of the uterus have been attached

more or less firmly to the anterior abdominal wall. There have developed connective tissue bands of varying length and breadth and thickness. It has been determined by Andrews in an exhaustive study of this subject that the more posterior on the uterus the fixation is made and the firmer the fixation the more marked is the dystocia.

When pregnancy occurs the connective tissue extending into the muscle of the uterus is strengthened and the normal hypertrophy of the uterine muscular fibers is disturbed. The fibers of the anterior wall are compressed and restrained into a firm mass which blocks the superior strait, and pushes the cervix posteriorly and the external os upward to the level of the promontory or even as high as the second lumbar vertebra. The anterior wall of the cervix is thickened, and the cervix is unusually long from the lack of intrauterine dilatation during the later days of pregnancy. The increase in the size of the uterus is accomplished by the thinning of the hypertrophied posterior and lateral walls, chiefly the former. This thinning is extreme, with associated loss of muscular tone. Irregularities in this picture have been noted by Dickinson where the development has been by the thinning of the right lateral wall of the uterus and by Williams where a buckling of the anterior wall occurred and a pouching in front of the shelf of tissue which blocks the superior strait. This feature has been noted previously by Heaton in 1897. Further, Gilbert noted a spur from the lateral wall with the head below and the other parts above.

The effect on the fetus is to cause faulty presentation, transverse or breech having been found in many of the cases. The fetal mortality during delivery when accomplished via naturales has been high.

In labor the uterine contractions force the hypertrophied anterior wall into the inlet of the pelvis, and make the maximum point of expulsive force well up on the posterior wall, this having resulted in at least three cases of rupture of the thinned uterus in that situation. The cervix will dilate somewhat as would any opening in the muscle; but there can be no advance in the right direction.

How shall such a condition be managed? First by prophylaxis. Never do a ventral fixation before the menopause without removing the tubes and the possibility of pregnancy.

Second, if the complication is present and the case is seen before the sixth month of pregnancy, determine if the cervix is steadily

rising to or above the promontory. If it is, open the abdomen and cut the band, and the fundus will "rise up" and the anterior wall muscle fibers will in time adjust themselves in the normal way.

Third, if the case is in labor, allow nature to proceed a while; assisting if possible by drawing the cervix down and forward and dilating it a little. Do not persist in these attempts till the uterus is retracted and rupture is imminent. A very few hours will determine if the effort is to be effectual.

Failing in this, do *not* open the abdomen and cut the band and expect labor to proceed. Those few cases reported of such management, followed by success, I believe to have been associated with a somewhat longer band than the average, without the formation of the "fixation shelf" of the anterior wall. Furthermore after the band is cut and the laparotomy finished it is scarcely conceivable that the anterior wall can readjust itself and be able to contract properly after such distortion; and the labor must be terminated operatively from below by cervical dilatation and version, or high forceps—serious operations in themselves, resulting quite likely in fetal mortality and tears and retrodisplacement demanding further operations of a gynecological nature.

It is better to deliver the woman by the quickest and simplest method, which in experienced hands is Cesarean section, and leave her cured of her prolapse or retrodisplacement and her pregnancy, lingering long enough to remove the tubes and prevent the recurrence of this serious danger to her life.

In conclusion, then, any operation fixing the uterus, either the newer vaginal fixation or the older abdominal, is absolutely to be condemned before the menopause unless sterility is assured. Let the uterus be brought into position by some operation on the ligaments, for so far as I am able to find, no dystocia has followed such a procedure.

THE HYMEN: ANATOMICALLY, MEDICOLEGALLY AND HISTORICALLY CONSIDERED.*

BY

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(With Illustrations.)

HYMEN is from the son of Apollo and Urania, the God of marriage. The Latins speak of it as *membrana virginitatis*, the Greeks, ὑμῆν, a pellicle, the Germans, *scheide klappe*, *jungfern hautschen*, *jungfern schloeslein*, *jungfern schatz*. The Italians speak of the *camisca del onore* and the Germans of the *ehrnhemde*, referring to the blood-stained night garment which shows the rupture of the hymen, *in primis nuptiis*. The French called the hymen *capule* or *cypris*—which latter term we often find in the writings of Fontaine. The word *chaperone* which we hear every day first meant the head dress worn in France by the doctors and bachelors of arts. Later it referred to an old woman who watched young girls and then assumed the significance of the guardian of virginity.

The hymen though frail is no doubt the strongest *signum anatomicum de virgo intacta*. The scarcity of the hymen is often commented upon; many physicians having told me that they never saw one. There are probably many more hymens than we know of, yet they are often found wanting. Unlike Kentucky whiskey they do not improve with great age for Shakespeare has said "The longer kept the less worth." The ancient Greeks termed their furies "eternal virgins." Hieronymus said, "*Difficilis res virginitas idioque rara*." Though the hymen as a sign of innocence and virtue may be laughed at by some who have never seen it, yet it is doubtless the best evidence we have, and should be honored with due consideration.

The principal varieties of the hymen are, in the order of their varied powers of resistance, weakest first: Cribiform, semi-lunar, horseshoe, annular, bilobate, imperforate. The comparative resistance of these forms is a matter of medicolegal importance.

* Read before the Cincinnati Academy of Medicine, Dec. 16, 1907.

Development of the Hymen.—The following theories have been advanced: The hymen is the product of the sinus urogenitalis. It is the product of the Mullerian ducts and the sinus urogenitalis. It is the product of the Mullerian ducts. It is the product of the Wolffian ducts.

Forms of the Hymen.—The annular hymen is found in two varieties. First we have a membrane which has the same width or breadth in all directions, in the center of which there is a circular opening having smooth borders. In the second form, annular hymen, the borders are slightly indented on the upper part while the remainder of the border of the opening is smooth.



FIG. 1.
Semilunar.



FIG. 2.
Single small
central opening.

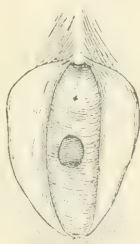


FIG. 3.
Infundibuliform
or funnel shaped.

There are also forms rather transitional tending towards the crescentic. There are found congenital slits of the hymen which are important, because they completely change the general aspect.

There is a hymen consisting of several lobes with rounded borders here and there slightly fringed which can be readily depressed backwards. A hymen bipartus or septus or bridge-shaped hymen is an orifice divided into equal parts by a narrow band of mucous membrane running from above downwards. Congenital hyperplasia is according to Luschka the cause of the hymen fibriatus. There are two forms of hymen which allow the penetration of large bodies without rupture, congenital slits and elastic membrane.

Anatomy.—The hymen is a membrane situated at the juncture

of the vulva and the vagina partially closing the entrance to the latter. Authorities give the hymen as occurring in the ape, bitch, bear, donkey, hyena, giraffe, horse, cow, and pig, besides the human female. Macroscopically the hymen appears as a crescentic or annular fold of mucous membrane. The thickness and consistence of the hymen vary widely; it may be a structure as delicate as a spider's web, or a dense ligamentous membrane.

The hymen is composed of connective tissue covered on either side by epithelium of the multilayered pavement type. The connective tissue in the hymen of the fetus, new-born and

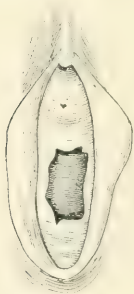


FIG. 4.
Irregular orifice.

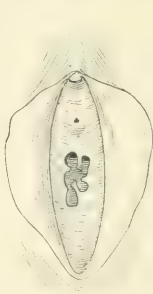


FIG. 5.
Dentate.



FIG. 6.
Double minute
openings.

adult is dense with numerous nuclei. In the amount of nuclei as well as in the density of fibers the hymen is readily distinguished from the vulva. The blood supply is rather rich. A gradual increase of both the number and thickness of the elastic fibers takes place throughout the existence of the membrane. Smooth muscular fibers have been repeatedly found in the normal hymen though their presence is not the rule. In atresia, congenital or acquired, smooth muscular fibers are found with great uniformity. It has always been very difficult to demonstrate the nerve supply of the hymen and most authorities have failed, though some few report having done so. Experiments have shown that if the patient's attention is diverted the hymen can be pierced or pinched without pain and that it is not sensitive to heat and cold. The pain in defloration is probably

not due to the laceration of the hymen in most cases but rather to the forcible dilatation of the entrance to the vagina. The elasticity of the hymen is in some instances so great that intercourse or even parturition may occur without rupturing it. As a rule, however, it is ruptured by the first coition. Healing is accompanied by a considerable formation of elastic and connective tissue.

Anomalies.—Hymen denticulatus. A frequent form consisting of a number of tooth shaped indentations which are limited to the smooth inner border, especially the anterior surface. It is often mistaken for ruptured hymen. To differentiate,

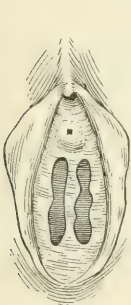


FIG. 7.
Double orifices.

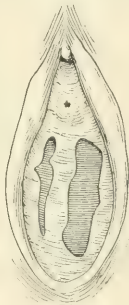


FIG. 8.
Double unequal
orifices.

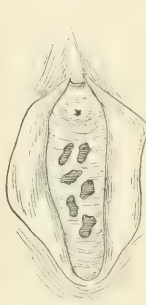


FIG. 9.
Cribriform.

note the uniform softness of the borders and the absence of cicatrization.

Hymen fimbriatus. The border of the hymen is fringed, the fimbriæ being due to a hypertrophy of the papilla. The fimbriæ are not limited to the border of the hymen but are spread over its surface and at times over the labia minora. In some the fimbriæ extend over the labia majora.

Hymen infundibuliformis. This variety is firmly attached at its base to the vagina but its free borders are pushed in cone shaped. This form often escapes rupture on sexual intercourse being pushed up and stretched by the male organ.

Hymen multiplex. Two hymens, one above the other, duplex, have been several times reported. Friso has reported

a case where four hymens existed one above another, each having a central opening.

Hymen septus. The hymeneal opening is subdivided, usually vertically, the band being generally thick inferiorly or posteriorly and thinning out anteriorly. The band if not central is usually deflected from the right anteriorly to the left posteriorly and the opening on the left is larger and higher. This anomaly is closely connected with the fetal obliquity of Muller's ducts. The hymen subseptus is one in which there are two projections which, however, do not meet.

Hymen cribriformis. This variety contains perforations probably two to ten.



FIG. 10.
Fimbriated.

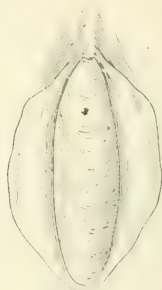


FIG. 11.
Imperforate.

Absence of the hymen. This though reported is so rare that men of enormous experience have failed to notice it congenitally absent.

Abnormal site of hymen. Cases are reported of higher and lower situations of the hymen. The higher is possible but the lower are more probably membranous occlusions of the vulva or adhesions of the labia. Turnipseed thought the hymen was situated higher in the negress which does not seem proven.

The male hymen. Leuckart pointed out in 1852 that the vesicula prostatica of the male represents not only the uterus but also the vagina of the female and it occurred to Shattock that an analogue of the hymen might be found in the adult male at the spot where the prostatic vesicle opens into the urethra. He accordingly made dissections and found that the termination

of the male vesicula, as viewed on opening the prostatic urethra on its anterior wall, consists of two projecting opposed longitudinal lips, forming a miniature hymen. It is in fact this male hymen which constitutes the eminence of the verumontanum. This homology is an extremely interesting scientific fact.

To Examine for the Hymen.—A careful way to examine a virgin with the hymen intact and not lacerate it, is as follows: The patient should be in the dorsal position. If examining with the left index finger stand to the patient's left side and if using the right index finger stand on the patient's right side. The well-lubricated finger is passed with the palmar surface down over the clitoris and bulb of the urethra, telling the patient

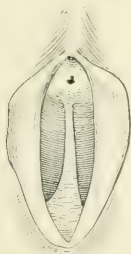


FIG. 12.
Columnar.

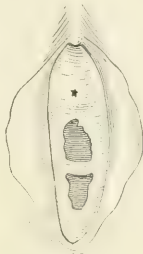


FIG. 13.
Bridged.

at the same time to bear down as if at stool. This latter downward pressure will depress the inferior border of the hymen and retract the whole membrane and enlarge the hymeneal opening so that in most cases the index finger in that position can be introduced and a fairly careful examination made without tearing the hymen. Another method is this: An ordinary soft red rubber catheter is taken and over its point for about one inch or one and a half inches there is placed an ordinary india rubber condom which is tightly bound onto the stem of the catheter by a few turns of thread. There is thus improvised an instrument closely resembling one which used to be employed for arresting hemorrhage in cases of epistaxis, the armed catheter being placed in the nose at the point to plug the nostrils. This arrangement is gently passed into the vagina; the point is then expanded either by inflation or by injecting a small quantity of warm water;

this done the catheter is clamped. There now is inside the hymen what may be termed a miniature Champetier de Ribes bag and by making very gentle traction on the catheter the hymen is put slightly on the stretch and bulged from within. In this way the whole hymeneal margin is fully exposed to view, so that any interruption in its integrity is at once detected, however slight it may be. In very young girls this method will be found particularly useful as in them the hymen is very inaccessible.

The Hymen Medicolegally.—Great is the crime of the unlawful destruction of the hymen. The punishment in most states and countries is severe. The old Mosaic law was death if the maid was engaged, and marriage and a fine paid the father of the girl and no chance for a divorce if the maid was not betrothed. There was a difference in the punishment if the rape was in the city or country, it being held that in the city she could cry out and get help and therefore the crime was on her part greater. Among the Athenians, Romans, old French and English and in many of the United States the crime was punishable with death. In Texas it is still a capital crime. The Manx brought the criminal into the market place. His victim was then given a whip, a sword and a ring. His punishment lay entirely in her hands. She could either kill, whip or marry him. Among the savages of the Fiji Islands the bride of the son of a chief, if found without her hymen, had her skull crushed by a club in the hands of her father or brother.

Rupture of the hymen may occur otherwise than by sexual intercourse, as by the examining finger or instruments of the careless gynecologist, masturbation, flooding, the passage of a tumor from within, the passage from without of various foreign bodies by accident or design. Hyrtl reports a case where a woman was sawing wood and a passing wagon threw her on to the saw, running the handle into the vagina and rupturing the hymen. The author of this paper was called in consultation in the case of a fifteen year old girl who, while walking a picket fence, fell astride it and a paling passed into the vagina rupturing the hymen and doing much other damage.

There is a curious belief among the ignorant that connection with a virgin will cure venereal disease. The presence of venereal disease in the victim appearing after a rape has served to convict a number who have taken this means to cure their disease. The diagnosis of rupture of the hymen in its medicolegal sense,

requires much care on the part of the examining physician. To differentiate between sexual and mechanical rupture is sometimes impossible.

The persistence of the hymen after sexual intercourse and even after labor is explained as follows: There are certain women in whom the hymen is relaxed and very dilatable and in these cases if there is no great disproportion between the male and female organs, the penis may penetrate the vagina without rupturing the hymen. The opening of the hymen is generally at the superior portion of the vulva, rarely central. Sometimes we have a double hymen divided by a longitudinal or transverse band. Here if the hymen is dilatable and lax it is simply pushed up at the first sexual act, then yields and penetration follows without rupture. In some cases the hymen yields gradually so that penetration is only attained after weeks or months, the hymen being gradually dilated. In some cases the penis simply invaginates the hymen, copulation taking place in a vulvo-vaginal sac of variable depth according to the elasticity of the hymen and the vigor of the male organ. It may happen that intromission does not occur, the semen being deposited upon the vulva and yet impregnation may follow.

Issues of the gravest import, the loss of life, liberty and what is to some much greater than either of these the loss of character and reputation frequently hang upon the evidence of the medical man. It is a fact which we cannot deny that this evidence is sometimes founded upon the most superficial knowledge and careless and cursory examination. While we should by no means shield the guilty we should protect at all hazards the innocent. How often have we noticed confident self-assurance in the witness box concerning matters which require special experience to enable one to attempt a solution. This is often noticed in cases of disputed chastity or attempts at abortion or the pathological proofs of mechanical violence or other means said to have been used to empty the uterus.

Varieties of the hymen of medicolegal interest include what might be termed the folding hymen. It is of normal appearance and structure, but of peculiarly yielding nature, readily admitting the entrance of an ordinary vaginal dilator or a fair sized speculum. During the passage of these instruments it folds back against the vaginal wall and returns quite intact on their removal.

Given an instance where a woman has been recently married

and difficulty occurs on attempting intercourse on account of resistance and feigned pain on her part, we sometimes find the following: On examination a complete hymen but of the folding type. In a case like this an opinion had been given that the woman was intact. Subsequent developments proved that she had lived irregularly before marriage and had aborted.

Suppose that a young girl brings a charge that a man has had sexual intercourse with her over a number of months. Medical examination finds the hymen complete and says that coitus would have been impossible over such a length of time. Expert examination shows that the hymen yields completely and folds back and that without any force or difficulty a fair sized conical speculum can be passed without the least injury to the hymen. The opinion should be given that frequent coition, partial or complete, was quite possible under the conditions. Cases occur in women who have been married a number of years where the speculum is passed without difficulty, the membrane simply folding back in tubular form as the speculum is pushed into the vagina, returning again to its natural position on the removal of the instrument. In fact pessaries may be introduced into some of these vaginæ without rupturing the hymen. It is important to remember that it has been pretty clearly shown that the *carunculæ myrtiformes* are formed only by childbearing and not by lacerations from sexual intercourse. Mere vulvar intercourse is constantly occurring and it leaves no evidence behind it. The law does not define in what penetration consists. Many of the cases which have been related of pregnancy having occurred with an almost imperforate hymen are but examples of conception following these half completed acts of coition. It is just these unusual occurrences which, arising suddenly, without warning, throw men off their guard and we find them giving an opinion, wrongly, on which so much depends.

Double hymen, according to Hart, is due to the permanent noncoalescence of the Wolffian bulbs and not of the ducts of Muller. This author has advanced a new view as to the development of the vagina and hymen. Until the third month of fetal life the vagina is formed by the coalesced Mullerian ducts, ending blindly at their lower ends; there is no lower aperture, no hymen. In the beginning of the third month proliferation of the epithelium lining the lower ends of the Wolffian ducts takes place, forming what he calls the Wolffian bulbs: the peripheral cells are active, the central ones become less active

and become arranged in layers of squamous cells, resembling the structure of vaginal epithelium at full time or in the adult state. The hymeneal opening is brought about by the epithelial involution from the urogenital sinus meeting the distended Wolffian bulbs.

Different hymens tear differently. The direction and manner of the tear depends on the shape and position of the hymen and the amount of force used. The semilunar usually tears in the mid-line posteriorly, the annular hymen tears in several different flaps; a resistant hymen with small opening tears usually at its base. Ordinarily we find the remnants of the annular hymen in four flaps.

It has been claimed by some that the rupture of the hymen from masturbation can be easily differentiated from that by sexual intercourse. The signs of masturbation are hyperdevelopment, multiple folding and excessive pigmentation of the genitals which correspond to the masturbating hand. Slight rupture of the hymen occurs usually on one side that of the masturbating hand and at this point adherence of the hymen to the labia minora by cicatricial tissue often results at the point of rupture. We may have the evidences of masturbation and criminal assault both present at the same time, and, in a by far greater number of cases the medical expert can swear to nothing beyond "penetration by some blunt instrument."

The Intact Hymen in Medical Jurisprudence.—When we reflect that the condition of the hymen is often the only evidence by which a differentiation between rape and assault with intent to commit rape can be made it is easy to see the importance of this integrity in a case which has come to trial. Some authors quote as many as a hundred or more cases of hymen remaining intact up to the time of delivery. Prostitutes have been found with intact hymens having made their living for many years by sexual intercourse. The writer remembers one such case in his practice. Cases are reported where the hymen is still intact after labor and even after repeated labors. This goes to show that a very large body may pass through a lax annular hymen without causing a rupture. Verdicts have been given against men for adultery and rape when the women were found to have the hymen intact. When it is known that conception may take place with the hymen intact juries are loth to accord it much standing as a sign of virginity.

The Hymen Abroad.—Among some Asiatic tribes a *virgo*

intacta has no charms for aspiring husbands. They prefer a widow to a virgin as she has no hindrances to coition and is a better housewife. He who has a widowed daughter can realize twice as much on her second marriage as on her first. It was Chaucer who said:

"If twenty crowns for thy lips so red,
What would I give for thy Maidenhead."

Yet the ancient Egyptians considered it a useless obstruction and cut it away. Athanasius says that the Phœnecians turned the bride over to a favorite slave to have her relieved of her virginity. Tiberius promulgated a law that no virgin should be hung. She must first be relieved of her hymen by the hangman. There are numerous instances among the ancients where they were weak backed and demoralized enough to consider the hymen only a hindrance to sexual intercourse and have it removed by priests or little ivory idols. In the Fiji Islands when a young man has arrived at the age when he is to assume the duties of a chief he selects the daughter of another chief as his bride. The two tribes then assemble at the market place to witness the test of virginity. After they have formed a circle the bride is led in and divested of her clothing. She then walks slowly and trembling before the multitude and seats herself on a snow white sheet and awaits the coming of the groom. He arrives promptly and with a serious countenance seats himself on the sheet opposite the bride. He then inserts two fingers into the bride's vagina, withdraws them, and holds them up high, while the bride and her tribe wait anxiously to see the few drops of blood which fall on the white sheet. The sight of the blood is the signal for shouts of joy on the part of the bride's tribe for both her honor and that of her tribe is now proven, and congratulations are in order. Among these people so much importance is placed upon the presence of the hymen that in case it is not found the girl is put to death.

The Restoration of the Hymen.—This is not so much a myth as some might think. Indeed it is not a great many years ago that a late Cincinnati physician advertised to restore the hymen "thus often saving embarrassment." He with ten saloonkeepers was elected to the Board of Health.

I have seen freshly lacerated hymens which could have been repaired with a good result. I have no doubt that where the hymen is entirely obliterated a plastic operation could be done

which would deceive any but a medical man and maybe some of them.

The *carunculæ myrtiformes* are the contracted remains of the lacerated hymen made more prominent by the stretching and the ruptures of ensuing childbirth. Immediately after coition there are present bloody lips and on the site of these usually are found the *carunculæ myrtiformes*. Sometimes there are three elevations, at other times but two or even one. They become hypertrophied so as to require surgical interference. It is possible that the elastic tissue plays a rôle in the formation of the caruncles as they are more frequent at the base of the hymen, and when the latter is torn they tend to contract it into the little bulbs near the base. If the hymen at childbirth is torn deeply into a number of small pieces each piece retracts owing to the more powerful action of the radial fibers. For some time thereafter one is able to pull each caruncle to its original length but after long standing atrophy results largely through the retraction of these fibers and faulty circulation. Copious hymeneal hemorrhage occurring after coitus is generally due to the extension of the lacerations into adjacent parts.

From a German Gynecologicum Hystero-poeticum called der Kleine Scanzoni we select the following epitaph to be placed over these last sad remains of the hymen.

"So Mancher suchte sie im Dunkeln
Und fand statt ihrer nur Karunkeln."

19 WEST SEVENTH STREET.

SOME EXPERIENCES RELATIVE TO THE CAUSATION AND TREATMENT OF CERTAIN FORMS OF METRORRHAGIA.*

BY

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THE significance of the condition comprised within the term metrorrhagia is often confounded by writers with that of menorrhagia. Though the two conditions are often associated yet in recounting the general symptoms pertaining to each class there will be observed a marked difference in their causation and,

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therefore, each will require for relief at the time a somewhat different treatment. Metrorrhagia is not infrequently due to hematocele, brought on through the occurrence of rupture of the sac in tubal pregnancy. Quite a number of such cases I have met with in my practice. The blood may be effused or extravasated into the pelvic areolar tissue and into the peritoneum and, when the oozing is moderate, the condition may escape detection for a considerable period of time. A varicose condition of the pelvic vessels may at any time superinduce a hemorrhage giving rise to much anxiety on the part of the medical attendant.

I recall the case of a woman who in the last two months of pregnancy presented a rather unique condition of the vaginal vascular tissues. The physician whom she had engaged to attend her during the parturition and who was a most excellent surgeon had early become much disturbed by the appearance which the lower pelvic vessels presented, since there had been attacks of hemorrhage particularly from the dilated veins of and near the cervix uteri. During his temporary absence I was suddenly called but not until after the labor had much advanced. As the fetal head descended low there was a most profuse flow of blood from the engorged vessels, but this was kept under control by pressure of hot sterilized gauze and napkins firmly applied to the parts. Soon after the child and placenta had passed, all hemorrhage ceased, and the uterus by the use of proper methodical pressure, firmly contracted without any further loss of blood. From all appearances it would seem that in this case the external pelvic and uterine veins had become unduly enlarged, in consequence of the imperfect development of the uterine sinuses. The conviction of this fact is strengthened by the history that the patient had suffered from a brisk attack of metritis immediately following a previous labor and for which she had been curetted. Some six other cases in which the cervical veins had become abnormally distended during pregnancy giving rise to early hemorrhage I have met with, but none was so marked as the one above mentioned.

On the other hand, I have had cases in which there was scarcely any external uterine vascular distention during the later months of pregnancy due, as I have observed, to the indurated condition of the vaginal uterine section and yet there was developed as a compensation an enormous distention of the enlarged uterine vessels. Such a condition is liable to lead not only

to immediate postpartum hemorrhage unless rapid and permanent uterine contraction follows, but also to further metrorrhagia at varying intervals.

Hemorrhage will usually occur particularly if there is or has been any subinvolution resulting from cervical hyperplasia and eversion of the parts. Some slight oozing of blood may follow too early resumption of the marital relation or from the all too prevalent practice of some women of inserting frequently a finger into the vaginal introitus. Such inconsiderate practice often prevents a cervical or a rectal tear, even if but slight, from properly healing, or it may cause a hard cicatricial mass to follow as a result of the habit. Sometimes only mere spots of blood will follow, as are seen upon the napkin, though this may be sufficient to excite more or less alarm on the part of the patient or her ignorant sympathizers, especially if they be of a nervous or excitable temperament.

In this connection I should mention that though uterine contraction may duly follow the descent of the placenta, relaxation may soon take place. This may happen from the pressure of the blood contained within the previously unduly enlarged uterine sinuses and from the faulty condition of the uterine parietes, they being insufficient to maintain the necessary continuous contraction. In those cases after the acute stage has passed, a chronic condition sometimes ensues and becomes the cause of much concern. For the relief of such added trouble, resort to curettement will not always prove adequate for a cure. It will be remembered that there is scarcely any submucous uterine tissue and that the utricular glands extend into the muscular tissue and that the lining of the cavity of the organ is often found to be much more fragile subsequent to pregnancy or a recent abortion than at other times. Curetting for the removal of the cicatricial endometrium may soon be followed by a new growth.

In cases in which pregnancy has been delayed for a proper period the regular recurring menstrual discharge will be less profuse, though in a number of cases in which pregnancy followed soon after curetting, I have known hemorrhage to become again a troublesome factor or a complication of the parturient process.

It has often been stated that uterine hemorrhage or metrorrhagia recurring after the menopause is indicative of commencing malignant disease. Though hemorrhage occurring at such a

stage of life should always be looked upon as a symptom of much import, nevertheless, its recrudescence should not be always regarded as affording a just cause for alarm in this direction. A thorough investigation should, of course, be instituted to seek out the cause.

Barring the existence of fibroid growths, subinvolution, associated with hyperplasia from old cicatricial tissue as the result of cervical laceration either from the traumatism of parturition or from excessive dilatation attendant upon curettement for the relief of fungoid growths occurring at the placental site or from other intrauterine disease, may be the cause of the hemorrhage. I have not infrequently been called to treat hemorrhage resulting from factors of this sort. One case in particular I will here mention. The patient had some five years before reached the menopause, but since then had become greatly reduced in consequence of loss of blood. She had previous to consulting me spent quite a fortune for treatment without relief. Her case had gone so far that total hysterectomy had been proposed as a necessary step. In this case I first dilated the lower segment of the uterus, made a thorough but gentle curettement and then proceeded to repair the cervical rent by removing freely all the cicatricial tissue of both lips without interfering with the normal structures of the parts. The cervical lips were then closed by the employment of an over and over continuous tendon suture. Drainage of the canal was maintained by a glass tube especially made for such cases. The coaptation and healing of the parts soon became perfect and the length of the uterine canal, as measured by the sound, was found to have shrunk from five inches to two and three-fourths. This patient had been phenomenal for her ability to take long walks without undergoing fatigue. Her former power for walking and her good health were recovered within one year after the operation.

Cases complicated with gonorrheal inflammation are sometimes more difficult to relieve. The hemorrhagic discharge will often be persistent for some time after the local lesions have been cured. In cases in which pyosalpinx occurs, relief may not be brought about until salpingo-oöphorectomy has been performed.

The possibility of a hidden polyp or other vascular growth should not be lost sight of. The record of one such case I have found among my notes. The patient who had passed the menopause and who had been the mother of three children gradually became the subject of uterine hemorrhage. She had consulted

two other physicians. On vaginal examination, there was no polyp to be seen. The cervix was in a practically normal condition. Not much hemorrhage was then noted but a slimy catarrhal discharge was quite profuse. Cervical dilatation was effected by the use of laminaria tents. A short sessile polyp was detected and removed. The discharge of blood was at first quite brisk. This was readily controlled by the hot douche and the free use of the tincture of iodine. The patient made a speedy recovery. Moderate uterine hemorrhage accompanying or following a catarrhal discharge is often quite characteristic of uterine polypi. Products of conception clinging to the internal uterine parietes will not infrequently necessitate removal.

Fecal impaction or obstinate constipation sometimes becomes the source of uterine hemorrhage. This may happen in cases in which there is no manifest lesion or solution of continuity of the parts but merely a sluggish condition of the venous system of the pelvic organs and of the chylopoetic viscera. The frequent observing of this condition prompts me to remark incidentally that the good effects brought about by the use of the various methods of bathing which have so recently been urged, come from the fact that the blood is more rapidly called away from the dilated venous system into the active channels of the circulation. Obstinate constipation following parturition is often caused by the indolent condition of the veins, particularly those immediately connected with the vena cava. Such a condition may have its origin in the pressure of the gravid uterus on the circulatory system. Hence the hemorrhage from the varicose veins of the lower extremities and the subsequent frequent uterine fluxes. Measures should at the earliest date be instituted to correct such an inactive state of the organs. No treatment is better than the frequent flushing of the rectum and the lower segment of the colon with hot sterilized water.

In some cases of excessive anemia induced by prolonged metrorrhagia I have administered in connection with flushing of the rectum, five to ten grains of iron in twenty-four hours until one to two thousand grains had been employed. It has not infrequently been surprising to note how satisfactorily the restoration of health of the patient would be brought about. In all such cases it is highly important that the requisite amount and quality of food should be taken though the patient must be strictly enjoined not to partake of an excess of nitrogenous food, otherwise the best efforts for relief will too often prove unavailing.

Some forms of endometritis may give rise to uterine hemorrhage. In such cases I have occasionally observed an irregular enlargement of separate areas of the lower section of the uterus. When there is found any marked laceration of the cervical tissue the advantages of trachelorrhaphy should not be overlooked. The operation should be preceded by proper irrigation and curettement. I have found sometimes surprising benefit from the application of the solid stick of nitrate of silver. I have had quite an extensive experience with the citrate of silver but the action of this salt is far from being as satisfactory as that of the nitrate, more especially when there is any suspicion of gonorrhea. Hemorrhage may follow as a symptom of interstitial or fungoid disease of the endometrium. Curettement will early be demanded. In addition to local, hygienic and dietetic treatment, chalybeates and laxatives methodically employed usually prove sufficient for a cure. If the patient has not reached the stage of the menopause she should be advised to refrain for a considerable period from becoming pregnant.

In this connection there is another point upon which I wish to speak, and that is upon the danger attendant on a sudden movement and overexercise of the bodily organs, such as may arise from indulging in fads of the day as that of rapid riding, as is endured in the fast flying automobiles, or from jolting and shaking incident to the long tours taken in electric street cars, and, sometimes, as I have reason to believe, incident to the indiscriminate submission to prolonged or sudden exposure to high tension from electrical treatment and to the vibratory movements employed in the mechanical methods of attempting relief of disease. Untoward results from such causes I have long felt have not been uncommon; more particularly have I felt so since I have taken occasion to review Wright's researches pertaining to the opsonic index of the blood. In using the centrifuge in the preparation of the blood corpuscles it must be done, it appears, without a vibratory movement of the apparatus lest the phagocytes be broken up. From what we have often seen of persons who have been exposed to severe or continuous jarring, to shakes, to vibrations, or to undue gymnastic exercise, we have abundant evidence that the toxins of the organs thus exposed have been proportionately increased, and if the phagocytes undergo at the same time a corresponding disintegration the life of the patient must necessarily be put in peril.

Overtaxing the mind or nervous system during early woman-

hood may become a sufficient cause for loss of control over the vasomotor nerves that regulate the uterine muscular tissue. Quite a large number of such cases I have had chance to meet with during the term of my practice. Conditions arising from this cause may if left untreated result in the production of menorrhagia or of long, chronic invalidism. Constitutional treatment undertaken and persisted in to regulate the habits and the exercise of the patient will go far toward overcoming the perverted functions. This should be supplemented by the use of some of the various medicinal tonic agents that will not cause any considerable degree of reaction from their overstimulating effect. All measures incidental to the treatment that may lead to overexertion and possibly to succeeding depression should be strictly interdicted.

The failure of the medical attendant to insist upon the strict observance of these points, has, I have much reason to believe, been the cause of unsuccessful results and has necessitated much too often removal of the uterine appendages. Now that the profession has become better acquainted with the normal functional uses of every bodily organ, the operation should be restricted for the relief of certain rare pathological conditions.

There can be no doubt that the ovaries even after the menopause has been reached perform functions of the highest value in the bodily economy. It would seem, therefore, a most unwise procedure to remove these organs merely as a means of controlling hemorrhage unless they have undergone such destructive changes or alteration that their longer retention would be wholly detrimental to the patient. I am not unaware that some surgeons have looked upon the conservation of the ovaries in cases of hysterectomy or in those of a hemorrhagic tendency as of small consequence to the patient. Such views I feel should be received as but of little weight and should be regarded as an outcome of an enthusiasm too often unconsciously indulged in for radical, surgical procedures.

Opium, as it is combined in some of the various preparations, I have often found a most useful adjuvant. It may be given in suppositories in connection with belladonna and applied to the cervix uteri or sometimes inserted into the rectum. In the latter way I have employed suppositories when I have wished to leave the vagina free, that intrauterine injections and other applications could be made. The treatment by vaporization or by steam conveyed through rubber tubes, as recommended by

Sneguirev, of Moscow, as early as 1895, I have found useful. I had, however, employed successfully, steam for controlling uterine as well as other forms of hemorrhage long before the article in question was published.

Other conditions with which metrorrhagia may be confounded are ectopic pregnancy and placenta prævia. These two formidable conditions should always be kept in mind when called to a married woman before she has reached the menopause.

Metrorrhagia may be consequent on puberty and the menopause. The beginning of the marital relation may be the exciting cause. Besides endometritis, cervicitis and metritis, subinvolution and retrodisplacements of the uterus may occasionally give rise to hemorrhage. Subinvolution is often due to cervical laceration. Hemorrhage due to retro- or other displacements can always, I have found, be cured by correcting the position of the organ.

Hemorrhage due to the presence of an interstitial or to a submucous fibroid can best be relieved by the removal of the offending tumor. I have recently seen the case of a fibroid in a woman who has long since passed the climacteric. I was called to treat her several years since when she was suffering from repeated attacks of hemorrhage consequent on an interstitial myoma apparently of the size of a large orange. I then advised immediate removal of the growth but as her husband had been obliged to submit to some important surgical measures for a chronic trouble due to severe injuries of his arm and thorax, she never could get courage to submit to operative treatment upon herself. She rested content with local methods of palliative and general treatment. Examination now of the morbid mass shows that it has undergone much retrograde process. It is tender, however, to the touch but it causes no pain. There has been no hemorrhage for some ten years, but since then the rectal and other veins have become greatly enlarged and dilated, as well as the veins of the lower extremities. I have no doubt that had she submitted, about the time I was first called, to an operation for enucleation of the uterine mass, she would have escaped the loss of much blood, that long interfered with her general health, and the supervention of the venous disturbances, with which she has since been suffering.

Among the general causes of metrorrhagia may be mentioned the hydremic form of obesity, plumbism, phosphorus poisoning, icterus, scorbutus, purpura, and certain other forms of chronic

disease. The occurrence of any of these several affections tends to diminish the plasticity of the blood and thus to cause disturbances of the circulation and to lead at times to excessive menstrual flow and to metrorrhagia. The treatment for the relief of hemorrhage from such causes should be directed mainly toward the removal of the original trouble.

825 MASSACHUSETTS AVENUE.

PUERPERAL HEMORRHAGE.*

BY

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THE terms puerperal, secondary or late hemorrhage are used to designate an excessive flow of blood from the genitals of the parturient woman any time from twenty-four hours after the completion of the third stage of labor to the end of the period of involution, which is, on the average, six weeks. The frequency of puerperal hemorrhage depends in a great measure upon the care given the woman during and shortly after the third stage of labor. The etiological factors concerned are: retained placental fragments or pieces of membranes, hypertrophied decidua, displaced uterus, dislodgment of clots from the placental site, emotional disturbances, relaxation of the uterus, retained clots, fibroid tumors, pelvic engorgement, wounds of external genitals, carcinoma of the uterus, hematomata, cardiac, renal or hepatic diseases.

The most frequent cause of puerperal hemorrhage is undoubtedly retained portions of placenta and membranes, the causes of the retention being either a too rapid or forcible delivery of the secundines, abnormal adhesion of the placenta to the uterine wall, some anomaly of the placenta such as the placenta multiloba, succenturiata, and the like. Retention of parts of the membranes does not produce puerperal hemorrhage so frequently as do portions of placenta, but is more likely to be a factor in the cause of septic infection.

The diagnosis of retained placental fragments is usually easy. A careful examination of the secundines will enable us to detect missing cotyledons from the placenta or portions of the membranes. It must be remembered, however, there is always a

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possibility that a placenta multiloba or succenturiata may have existed and retention of the isolated portion be the cause. Also, through gross mismanagement of the third stage the placenta may not have been examined. In order, therefore, to determine positively the condition present, the interior of the uterus should be carefully explored by the finger, care being taken not to mistake portions of the decidua serotina for retained and adherent placental fragments.

The indications for treatment are obvious; removal of the offending particles, thorough irrigation with a hot antiseptic solution and the administration of a few doses of ergot or quinine.

Hypertrophy of the decidua, because of the mechanical irritation it produces, predisposes to a congestion of the uterus and consequent hemorrhage. It is generally supposed that hypertrophy of the decidua is due to a pre-existing endometritis of syphilitic or gonorrheal origin. It may, however, follow a simple endometritis of nonspecific origin. The importance of this condition was forcibly brought to the notice of the writer by a case seen recently in consultation with Dr. J. D. Matthews, of this city, where the persistence of severe after-pains led to a careful examination under an anesthetic, and nothing but an immensely hypertrophied decidua vera was found. The diagnosis is made by a careful study of the history, and physical examination under an anesthetic if necessary. The judicious administration of ergot is the keynote in the treatment.

Displacement of the uterus, is a frequent cause of hemorrhage during the puerperium, retrodisplacement accompanied by prolapse being the most common. The passive congestion thus produced is the exciting cause of the bleeding.

Retention of clots, because of a displacement which mechanically interferes with their escape, not only predisposes to puerperal hemorrhage but is a constant source of possible decomposition and saprophytic or other infection. The cause of the displacement can be readily determined; the uterus is heavy, the pelvic floor lax and distended, and if, added to this condition we have an improperly adjusted abdominal pad and binder and the patient, all too soon (as they frequently do), assumes the erect posture and takes up once more the burden of her household duties, it can be readily understood why the uterus would bleed.

The indications for treatment are manifest; rest in bed, knee-chest position for a few minutes twice daily, replacing the

uterus to the normal, and general tonic treatment. Just a word relative to the application of the uterine compress. The mistake is often made of placing a compress *in front of* the fundus of the uterus. This is wrong; the compress should be placed above the fundus in such a manner that it forces the intestines back and on top of the uterus, thus maintaining the anteverted position and sufficient pressure to help sustain contraction. Another somewhat frequent cause of puerperal hemorrhage is *dislodgment of clots from the placental site*. A brief résumé of the manner of closure of the uterine sinuses after detachment of the placenta will not be amiss here. It has been found there is in the last two or three weeks of gestation a slowing of the blood current in the uterine sinuses, a tendency to diapedesis of the white blood corpuscles owing to the thinning of the vessel wall, and the muscle fibers arrange themselves longitudinally and in circular bundles around the sinuses. When separation of the placenta takes place the longitudinal fibers produce a retraction of the ends of the sinuses into the uterine wall and the circular fibers contract and lessen materially the lumen of the vessels and a plug of coagulated blood adds further to this wonderful provision of nature for the saving of the woman's life. It can be readily seen then how a sudden turning over or sitting up in bed, coughing or sneezing, might dislodge one or more of these clots and a sudden and profuse hemorrhage might occur.

The diagnostic feature of this form of puerperal hemorrhage is the sudden onset and profuse flow, and the only safe and reliable treatment is packing the uterine cavity with iodoform gauze, which exerts pressure, is astringent and stimulates contractions.

Puerperal hemorrhages due to *emotional causes* are familiar to us all, are generally not alarming, and are treated along rational lines—reassurance of the patient, perfect quiet, etc.

Hemorrhage due to *relaxed uterus* is usually found in the weak and poorly nourished, and should be treated by measures tending to strengthen the general tone of the uterus, such as the administration of strychnine, quinine, etc., and the use (as in all other cases of profuse bleeding) of saline solution per rectum or by hypodermoclysis.

Intramural or submucous fibroids occasionally complicate the puerperal state, and can only be discovered by a careful examination of the uterus. The treatment will depend upon

the condition of the patient, size and character of the tumor. etc.; if pedunculated, it can be ligated and removed; if sessile and easily reached it may be enucleated. When operative measures cannot be resorted to, the administration of ergot, quinine and strychnine is indicated.

Puerperal hemorrhage may be due to engorgement of the *pelvic vessels from heart, liver or kidney disease*. Determination of the blood to the pelvic viscera by *premature sexual intercourse* or a large vein or small artery in the cervix, vulva or vagina may have been ruptured during delivery and a clot formed at the site of the rupture the dislodgment of which, taking place three or four days after, produce a more or less profuse hemorrhage.

The possibility of carcinoma or sarcoma developing at the placental site, or malignancy of the cervix, should also be borne in mind.

Puerperal hematmata occasionally develop during or after labor. This condition is an interstitial effusion of blood with tumor formation, large or small according to the degree of hemorrhage. The most frequent location of a puerperal hematoma is the labium majus—usually in one, sometimes in both. They may, however, occur in the labia minora, vaginal wall, under the skin of the perineum, in the cervix, the periuterine tissues, or immense hemorrhages may take place in the sub-peritoneal folds of the broad ligaments.

With regard to the etiology of these tumors it may be said that there is a predisposing, determining and immediate cause; a predisposing cause would be a general varicose condition of the veins of the patient, together with the strain imposed by the pressure of the gravid womb and powerful muscular contractions during labor. The determining cause may be due to pressure of the bony parts of the fetus or the instruments. The immediate cause the rupture of a vein and the extravasation of blood into the surrounding tissues. The hemorrhage may be late in appearing owing to delayed rupture from pressure necrosis. The diagnosis is usually easy. The location, color, size and consistency, together with the signs of hemorrhage if the tumor is large. Hematomata have been mistaken for an immensely engorged anterior lip of the cervix, a placenta prævia, a blood clot, varicosities of one or other of the labia, inversion of the vagina, and of the uterus. The terminations of puerperal hematmata are thus classified by Winckel:

1. Death without rupture.
2. Death following suppuration of sac and septicemia.
3. Rupture with recovery.
4. Rupture with fistula formation.
5. Recovery by absorption.

The prognosis is good in these days of scientific surgery.

With regard to the treatment it may be said that the larger the tumor the more care will be necessary in handling the case. A tumor the size of the clenched fist should be promptly opened, the bleeding points sought and ligated and careful packing and antiseptic irrigation instituted. A tumor the size of a hen's egg may be let alone, but carefully watched, and if rupture takes place it should be carefully and frequently irrigated to guard against septic infection. Intrapelvic hemorrhage proper should be treated by ice to the hypogastrium, supporting measures, and, if the indications warrant, laparotomy and ligation of the bleeding point. Arteriosclerosis, too, is a possible cause of excessive bleeding in the puerperal state, the diagnosis of which may be arrived at by a process of exclusion. When we come to consider the treatment of this condition it may be summed up thus—application of tr. ferri chlor. to the interior of the uterus, rest in bed with proper nourishment, and in intractable cases total hysterectomy.

PERSONAL OBSERVATIONS AND CONCLUSIONS ON THE TREATMENT OF FRACTURES.*

BY

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I PURPOSE giving my personal observations and conclusions in the treatment of fractures, though to do more than review briefly the many details incident to the care of fractures and their complications, is manifestly impossible in a paper of this length. The etiology, diagnosis, prognosis and treatment must all be taken into consideration when dressing these cases. In addition to the reduction and fixation, we must consider the care of the regional tissues, which are often damaged beyond the immediate field of fracture, according to the character and force causing the traumatism.

* Read by title at the Twentieth Annual Meeting of the American Association of Obstetricians and Gynecologists at Detroit, September 17-19, 1907.

My experience has taught me, however, the importance of accurate diagnosis, of perfect reduction and fixation with the use of the simplest dressings, and the observation of perfect detail in their adjustment.

The subject is an anxious and important one, and the necessity of accurate knowledge is apparent, if we would obviate the results of careless or ignorant treatment of fractures so commonly seen; and wish to avoid malpractice suits which are always a source of anxiety, even though successfully defended. I would suggest that we should protect ourselves in all cases of fracture against civil damages; for a disgruntled patient, when in collusion with a disreputable lawyer, can make a lot of trouble, even if the treatment in contention was correct and the result an average one. A complete record of each case should be kept, with a description of the injury, fracture, dressings, and general procedures adopted. I believe this to be the best protection we can have. In addition, we should have a consultation with some competent surgeons, at which time the prognosis should be given and be a part of the case record.

An experience I had several years ago forcibly illustrates this feature. J. M., male, aged forty, fell from an electric light pole and comminuted the bones of his elbow. There was a great deal of swelling, which persisted for a long time and prevented an accurate determination of the condition. Two consultants saw the case with me, and suggested a straight splint as the proper dressing. Their suggestion was adopted, and the result was a partially ankylosed joint, nearly straight. Later the patient was sent to an eminent surgeon who thought he could give him a useful arm; unfortunately a flail joint resulted. At this time my troubles had an exacerbation, as two local physicians and as many attorneys urged the patient to bring suit for malpractice against me. In this they were not successful; nevertheless, the case was a source of much anxiety, as the patient had a useless arm, and a family to provide for; in addition, both my consultants having died, I would have been in an awkward position had the suit been brought.

The diagnosis and prognosis of fractures are both important and difficult, calling for all the skill and courage of the physician. The diagnosis must be accurate, if we are to treat fractures correctly. A thorough knowledge of the bony skeleton is most imperative, for while we usually have a normal part with which to compare the injured member, this is not always so. The

x-ray is a most useful adjunct in making a diagnosis of fractures. Moreover, its value is not confined to the diagnosis of the condition, as it can be used to show the position of the bones after the dressing is applied, if a metal splint is not employed. The *x-ray*, however, has its fallacies as well as its virtues; and I am of the opinion that men not generally familiar with this field of work believe that the deductions to be drawn from it are practically infallible. Such, however, is not the case, until one has mastered the art of fluoroscopy and skiagraphy. Still, the *x-ray* is most helpful, and its use is imperative in fracture work; for I believe that a physician would be held negligent by the courts in a civil suit for damages when a deformity or a vicious union occurs. For if it can be shown that the ends of the bone are out of alignment, the natural conclusion would be that they had never been correctly approximated; or, if so, not properly held there.

The prognosis depends upon the character of the fracture, the force causing it, the extent of the traumatism to tissues other than the bone, the diagnosis, the treatment and after-treatment; also the general make-up of the patient, age, habits, and complicating dyscrasia, as syphilis, alcoholism, rheumatism or gout.

The treatment of individual fractures will, as a matter of fact, be governed by personal judgment and skill. The simplest device or dressing that will hold the broken ends in apposition should be employed. It is here that the personal skill of the surgeon manifests itself; for the dressing employed must insure fixation, or it will prove a failure. It is not uncommon to find that a dressing does not hold the fracture as expected and must be changed. If so, it is well to inform the patient of the reason; for while the changing of the dressing is not of much moment to the physician, it may establish a lack of confidence on the part of the patient and friends, for the ordinary individual believes that the bone is in some manner mysteriously manipulated when being set; and if the procedure is repeated they are likely to conclude that the fracture was not properly treated at first and "had to be set over again,"—an expression only too familiar to surgeons.

Our aim should be a dressing as comfortable as possible to the patient, allowing as much bodily freedom as is consistent with holding the parts in apposition. The so-called ambulatory dressings for fractures are, for these reasons recommended, and

we should adopt them whenever feasible. Particularly is this so with alcoholics, who do not bear well forced bodily confinement following a traumatism. When it is impossible to employ an ambulatory dressing in these cases, a temporary dressing that is comfortable and allowing some bodily movement is permissible for the first few days, placing the ideal dressing later. In this way we may obviate the disturbances of the nervous system which are often alarming. I have personally observed acute mania and delirium tremens in my early practice with alcoholics, due, I believe, to the forced confinement.

Now let us assume that we have a fracture to dress, and that **it is one of the long bones.** A diagnosis having been made, we proceed to reduce the fracture and apply our dressing. This is ordinarily easy of accomplishment if the condition is uncomplicated, and the average patient can endure the pain incident to the necessary manipulations. If not, and the reduction or apposition cannot be accomplished satisfactorily, an anesthetic should be administered. As soon as the muscles are relaxed and the patient out of pain, manipulation usually brings the bones into place. If not, and it is impossible to make accurate approximation, I would unhesitatingly advise cutting down on to the fractured ends, and doing whatever is necessary to approximate and secure the approximation of the fractured ends in place. (In suggesting this procedure in bone surgery, I assume that the surgeon is absolutely sure of his technic.)

If the parts are badly swollen and contused, a temporary dressing, with local use of ice for a few days, will relieve the condition, after which a permanent dressing may be applied. If this is not done, and we place the permanent dressing immediately, we accept an uncertain beginning, and the outcome may be a deformity, or even worse, and our troubles will only have commenced.

Other complications in fractures of the long bones which require extreme care and consideration, are the fractures which extend into a joint; or where dislocation occurs in connection with a fracture; or where the fracture is compound. When the fracture extends into a joint, the most perfect apposition, with secure fixation, is absolutely necessary. When associated with a dislocation, this condition must be corrected before any attempt is made for a permanent dressing, even if operative measures are required, to accomplish it. If the fracture is a

compound one, cut down and open the laceration at once, and do it boldly. A free incision permits proper inspection and the removal of all dirt and clothing from the wound. If any tissue is between the ends of the bone, or if any has been button-holed, it can be corrected. Apposition can then be secured, the periosteum sutured, and the parts held either by wire suture, by nails, by screws, or other appliances. This will insure a perfect result in the usual time for an ordinary fracture, with little pain or discomfort to the patient. If treated by extreme extension, or by sawing off the ends of the bone and then applying extension, without opening up the wound, we may have faulty apposition, sloughing, necrosis, infection, delayed union, or even an ununited fracture. If you have occasion to drain these wounds, employ only rubber tissue. Should the wound be contaminated with common soil, dirt, manure from a barn, a stable or a tannery, a prophylactic dose of tetanus antitoxin should be given immediately.

After examining a fracture, one's experience will usually suggest the character of splint best adapted to hold the fractured ends in apposition; we must always have in mind the muscular force which may be causing the deformity, and which must be overcome; in making the correction with coaptation splints, extension and counterextension are of value and invariably necessary. Here it is that our individual experience and ingenuity are our best resource. Much pain and annoyance will be saved the patient if we fit the splint to the opposite member. After this has been done, the splint is to be carefully padded, thoroughly protecting all prominent or bony parts where there may be pressure. If this little detail is forgotten or neglected, annoying excoriations and often extensive sloughing may occur. Personally, I prefer lint or sheet cotton for padding splints, notwithstanding the almost universal use of cotton batting. When lint or sheet cotton is employed, always be careful to spread it evenly and without wrinkles or folds. If cotton is to be employed, use only the raw cotton, as absorbent cotton will become moist with perspiration and mat down and be most uncomfortable to the patient. The claim for cotton is that it is elastic, and the roller bandage will therefore not interfere with the circulation, even should the member swell or be tightly bandaged. This is measurably so, but a splint that has been sparsely padded, fits better and must hold the ends in apposition more securely. Of course the bandage must be carefully applied.

and the fractured member watched, for if the circulation is interfered with from swellings, it must be corrected. But this is so of all fractures, particularly if placed in a permanent dressing immediately after the injury.

The swelling may not occur for several hours, but if it is not anticipated and relieved when it first occurs, the patient will suffer much unnecessary discomfort and pain, and probably serious trophic disturbance. Splints are usually held in place by plaster strips, oxide of zinc or swansdown being the best. If the fracture is in a region where the skin is covered with hairs, it is better to shave the parts before applying the plaster. If this is impracticable, gauze under the plaster is often admissible. In placing the plaster strips, try to arrange them so that the seat of fracture can be observed at will without disturbing the general dressing. In other words, do not hide a fracture away. The very common procedure of placing a splint on a fracture after a cursory examination, followed by elaborate bandaging, to be left there three or four weeks without inspection, is only mentioned to be condemned. If the apposition is not perfect at first, or if it is, and the dressing becomes loose from subsidence of swelling, or the packing of the cotton in the splint, a preventable deformity may occur, which might not be discovered until too late to be corrected except by operative procedures. I have learned that it is more satisfactory to personally hold the fracture when the dressing is being put on; you can then hold it just as you want it, directing the application of the splint and primary plaster, which is simple as compared with maintaining the proper apposition in some cases.

Provisional dressings, as mentioned, are often imperative. One surgeon will use a fracture box, another a cradle and still another prefers sand bags alone or in combination. In any event, place the bones in proper alignment, using extension and counterextension as indicated, and make the patient as comfortable as possible. The local application of ice is of great value for it will control both pain and swelling; but do not expect any results if a thick layer of cotton is between the tissues and the ice bags.

Under the head of provisional dressings, a word may be said about fractures of the hip, and what I shall have to say applies only to those cases, which occur in the aged. It has been my practice to follow the doctrine of Bryant, of London, that is,

1. Save the patient's life.

2. Secure union.

3. Secure union in the best possible position.

Personally, I seldom confine patients in a long fixation splint as is so common; for if I do, a large percentage of them will die with pneumonia. I usually employ the double inclined plane, with sand bags on either side, and just enough extension to steady the leg. These patients should be placed in a fracture bed, for they then can more easily be kept clean, the skin watched and bed sores avoided. I further try to have them out of bed and in a chair as early as possible, which is always before bony union occurs. We should hesitate to disturb an impacted fracture at the hip, preferring the deformity to a better alignment and position which may terminate in a false joint. A fixed splint can be made from starch, soluble glass and plaster Paris. The ambulatory fixed dressings are employed and have their advantages. The joint is immobilized and allows the patient to be rolled in bed without disturbing the seat of fracture. It can be arranged with an adjustable joint so that the patients can be placed at an angle allowing them to sit up, if desired. This overcomes the objection to the former style of fixation splint which confined the patient rigidly so that pneumonia was prone to develop. If this is so, then we have the advantage of perfect apposition of the fracture, and comfort of the patient, avoiding deformity which is all too common.

The plaster Paris case is serviceable at times, though requiring more skill in its application than other forms of dressings. After one becomes familiar with its use and method of application, a most convenient and serviceable dressing is always available. The first step in placing a plaster Paris dressing is to carefully cover the parts with a roller protective bandage. Either flannel or cotton bandages are best, and should be smoothly applied, using the least quantity that will insure the safety of the skin. If this precaution is not taken, the cast will become loose and by its movement cause excoriation or even ulceration. The plaster Paris bandages must be evenly and smoothly placed, particularly the first layer. The tension and firmness of the bandages is a matter of experience, remembering that it will contract somewhat. The cast should be opened as soon as dry, and secured by plaster straps or bandage; and, lastly, do not apply when tumefaction is expected, or if present, until it has subsided. These cases always require constant personal attention and watching, for interference with

the circulation occurs early, and when it does occur it may terminate seriously if not relieved.

I recall an instance in my work not long ago where a double amputation was barely evaded, the plaster cast and my thoughtlessness being the factors. A double osteotomy was done for a colleague. I placed the dressing and was not expected to see the case again. I did, however, incidentally about thirty-six hours later, when going through the ward, and found the circulation entirely shut off by the cast. I removed the cast, and found the skin covered with blebs; later there was extensive and deep ulceration over the region of the cast which lasted for months.

Fractures of the patella and skull are among those which cause us the greatest anxiety and are deserving of special consideration. Those of the patella will always tax one's determination in trying to decide upon the particular dressing, because there are two accepted methods; one the hyperextension of the leg with a long posterior splint, drawing the parts together with hooks, or plaster and bandages. The other is to cut down on the bone, and by means of a suture, wire or other material, bring the separated bones in apposition. Both methods are lauded and condemned. Personally I believe the open method is to be preferred, where not contraindicated by physical conditions. Do not operate until after the third or fourth day, whatever treatment you adopt. Outline your reasons for this to your patients, stating plainly both sides of the treatment and their results.

Fractures of the skull are always serious, and exact diagnosis is not always possible. These traumatisms often present the most unique conditions. The ones most trying to diagnose are:

1. Where the internal table is fractured and not the external.
2. Where there is a fracture of the internal table, distant from the external fracture.
3. Where there is a rupture of a blood-vessel within the skull, associated with a fracture.

In an injury involving the skull, examine the entire surface carefully; a superficial examination has cost many a life, two or three within my personal observation. When the bone is depressed, even if only the external table, it should be raised. This can usually be done without much trouble; but where the fractured pieces are wedged, and there is no place to introduce the elevator easily, do not hesitate to remove a button of bone

with the trephine; this is a conservative procedure. Exact technic is imperative. Often when operating for this condition, we find a more extensive injury than was diagnosticated. The bones must be raised, all spiculæ removed; then with a rongier, or other suitable instrument, round or smooth the edges of the fracture, doing as little damage to the membranes as possible. If hemorrhage is present, it should be controlled by ligatures, and temporary pressure of hot packs—never by pressure from gauze packing. Any laceration of the membrane should be repaired, and if drainage is required, rubber tissue is the choice. I would warn against the employment of gauze or soft drainage tubes.

In cerebral injuries, when the external table is not fractured, and we suspect the internal may be, or that there may be a hemorrhage inside the skull, it is good surgery to defer exploring the cranial cavity until definite manifestations are present. To determine operative indications will, however, always tax our judgment. While there is danger in meddlesome surgery, there may be death in delayed surgery. I have experienced both. Watch the patient carefully, read the symptoms, and have the courage of your convictions. A final warning—never close a scalp wound following a severe injury, without feeling with your finger in the wound for a linear fracture.

In my personal work I consider the after-treatment of fractures quite as important as the initial dressing. The first few days after the primary dressing, we must watch the circulation, and know that it is not interfered with; traumatic swelling, or too tight bandaging will act as causes.

Later, from four to ten days, we must keep track of the bandages, as fixation may be disturbed by the dressing becoming loose. This is likely to occur if there was any swelling, or too much padding was employed, when the primary dressing was placed. From ten to fourteen days after the injury, I like to take the fracture down to learn how it is coming on. By this time there is usually enough inflammatory tissue thrown out to hold the fracture in place, and we can judge the real position of the bones, and if it is not correct they can be easily adjusted. Passive motion is an open question. I prefer to commence it about this time, particularly if the fracture is in or near a joint, in order that the fibrous exudate may be taken up and contractions not occur. If this is not done, we will have ankylosis from contraction of tendons, and it will take from three to twelve

months of manipulation and massage to restore the functions of the parts. This complication is a very common one in the practice of men who allow their fractures to go undisturbed until united, say from four to six weeks.

The period during which a fixation splint should be worn depends upon the region and character of the injury, the age of the patient, and occasionally personal conditions. The only precaution is to have the patient wear it until the parts are thoroughly strong, remembering that the growth of bony tissue takes time. I might mention here that the femur, neck, patella and olecranon do not throw out as extensive a callus as other regions, and must always be managed accordingly. Delayed union is the result of constitutional or local condition, the latter being principally when tissue is between the ends of the bone, when the dressing becomes loose, the ends become smooth, or if necrosis occurs. If delayed union persists, we then have a condition spoken of as an ununited fracture. This condition can sometimes be corrected by rubbing the ends of the bone together to make irritation, followed by a firm fixation splint, with induced passive congestion. The latter is best done by constricting the venous circulation proximal to the fracture. We would speak of it as the method of Bier, though my preceptor taught me its value in 1881. If the other condition mentioned is the etiological factor, surgery is the remedy.

Hip cases in the aged should be out of bed and into a chair daily as soon as there is fibrous fixation; by so doing, ossification will be hastened, pneumonia and bed sores will be prevented, and the patient will be generally better and happier.

In fractures of the skull we must be on the alert for symptoms indicating irritation of the meninges, or brain abscess. In linear fracture at the base, it is imperative for the patient to remain in bed at least three weeks, even if feeling perfectly well, with all functions normal, for there have been repeated instances of sudden death in these cases, when the patient has attempted to be up and about sooner. In these cases, and also in compound fractures, and in fact whenever there is a rise of temperature unexplained, remove the dressing and explore at once, as there is probably suppuration going on. A failure to do this may mean the loss of life or limb, perhaps both.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of December 10, 1907.

The President, E. B. CRAGIN, M. D., in the Chair.

DR. CHARLES G. CHILD, JR., presented a specimen showing

CONGENITAL ABSENCE OF THE RIGHT TUBE AND OVARY.

Absence of the appendages, unassociated with defective development of the uterus and vagina, seems to be a condition of rare occurrence, and I am able to find mention of but a single reported case—that of Colomiatti. In his case, as in mine, the right tube and ovary were wanting while the uterus and vagina were well formed.

Hart and Barbour make no mention of the condition in their text-book.

Roberts says, "absence of one tube or ovary is usually accompanied by deficient development of the corresponding half of the uterus." Findly, "that a single tube may be absent, in which case the corresponding side of the uterus is usually want-

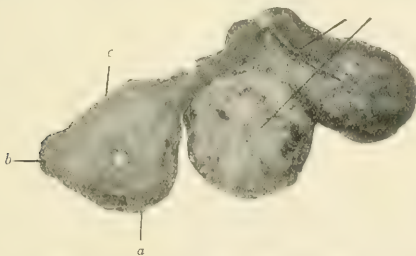


FIG. 1.—Congenital absence of the right tube and ovary. *a.* Uterine canal divided at internal os. *b.* Right horn of Uterus. *c.* Fundus. *d.* Left tube and ovary.

ing." Allbutt and Playfair, "that the uterine horn is absent on the same side as the tube." Ashton, "absence of the tube is a very rare occurrence and is usually associated with some anomaly of the uterus."

On August 8, 1906, I operated on Mrs. B., aged twenty-one. She had first menstruated at sixteen, was always regular, having a seven day flow, profuse in character with severe pain; one

abortion at six weeks thirteen months previous. For seven months past she suffered from continuous pain in the left iliac region, and on defecation.

At operation, through a transverse incision, the uterus was found adherent to intestines and omentum; a left pyosalpinx and cystic ovary, two inches in diameter, were prolapsed and adherent in the posterior cul-de-sac, and the right appendages were absent.

Supravaginal removal of the uterus and appendages was performed.

Convalescence was uneventful. Maximum postoperative temperature 100, with a pulse of 96, on the evening of the first day; temperature normal, pulse 94 on the second day.

DISCUSSION.

DR. BROOKS H. WELLS.—On February 14, I saw a similar case at the New York Polyclinic. The woman was married, had been pregnant several times and always miscarried. I found upon examination a retroflexed uterus with adhesions posteriorly. I operated for the relief of her retroversion and found that there was complete absence of tube, ovary and parovarium on the right side. The round ligament was normal. It was certainly a congenital condition because there were no scars from any previous operation either on the abdomen or vagina.

DR. C. G. CHILD.—My specimen, it seems to me, should be put on record because of the absolutely perfect formation of the right cornu of the uterus. Numerous instances of absence of the appendages have been reported but such cases have been accompanied by the absence of a part of the uterus. In this case there was an absence of the right appendages with a perfectly formed uterus.

DR. HERMAN J. BOLDT, presented the specimen from a case of

ABDOMINAL PANHYSTERECTOMY FOR PUERPERAL SEPSIS CAUSED BY A MYOMA IN THE LOWER SEGMENT OF THE UTERUS AND CERVIX.

An Italian woman was admitted to my service who had been confined nine days previously. From the third day on she began to have chills and elevation of temperature ranging up to 104.6. On admission her general condition was very unfavorable, with a pulse of 140 of poor quality. I ordered an intravenous infusion; an intrauterine douche to be repeated every two hours, and an ice coil to be applied on the abdomen, and free alcoholic stimulation combined with saline solution per rectum. When she was seen by me soon after her temperature had dropped to 99.4 and the pulse beats to 120. The uterus was found to be large and very boggy; in the cervix was a myoma, filling it out to such extent that an examination of the

interior of the uterus was not feasible. Considering her improvement on the treatment adopted, it was thought best to continue it. During the afternoon, however, the temperature again began to rise, and the pulse, in number of its beats and the quality, kept harmony with the temperature. At nine o'clock the temperature had reached 105, pulse 146, and the abdomen began to distend. In addition she had had a violent chill. Preparation for immediate operation was made and a pan-hysterectomy done. It was my opinion, that the temperature, if the result was to be favorable, would drop within a couple of hours after operation, perhaps two or three degrees. On the following day the temperature would, however, again rise to about the same height that it was before operation, until the septic poison had been eliminated from the system, then, if recovery would take place, the temperature would gradually recede. This has been the case and the general condition of the woman is favorable, leading me to believe that recovery will ensue. In unfavorable cases, even if the temperature does drop, the general condition of the patient does not markedly improve. I have made these observations so frequently, that I believe them to be fairly reliable. I shall report the final result and the pathological findings. I have had an opportunity to operate several puerperal cases complicated with myomata, giving rise to sepsis, during the last few months, and the result has been favorable in each.

[The following is the pathological report received from the Practitioners Laboratory.

"No. 36709.—Uterus $6\frac{1}{4}$ by $3\frac{1}{2}$ by 2 inches. The lower, posterior wall is occupied by a rounded tumor, which on trans-section appears to be a fibroid. The interior is occupied by a dark red mass (retained portions of placenta). Microscopically, the tumor referred to consists of edematous and necrotic muscle fibers, intensely infiltrated with pus. A small pus focus was found near center. Both streptococci and staphylococci are present.

"The membrane on posterior surface is merely thickened peritoneum. No microorganisms were found here."

The patient made a good recovery, convalescence being delayed for a short time by a phlebitis of the right saphenus.

H. J. B.]

DISCUSSION.

DR. ABRAM BROTHERS.—I think that Dr. Boldt to-night has employed the term sepsis as synonymous with puerperal fever. Dr. Boldt, some years ago, properly suggested to this Society the use of the term bacteremia as synonymous with septicemia, and while the Obstetric Society did not see fit to adopt it, the term has since come generally into vogue. In bacteremia, the bacteria themselves are in the blood. The specimen pre-

sented to-night is not from a case of bacteremia (or septicemia) in that sense. The piece of retained placenta, which is present in the upper portion of the uterine cavity, accounts for the temperature. This, then, is a case of sapremia or toxemia. The toxins of certain forms of sapremic or specific bacteria have been absorbed in the blood and the case is, therefore, one of sapremia or toxemia and not of bacteremia.

DR. S. MARX.—It is wrong to have this case on record as a necrotic myoma producing an infection, be it called sapremia, or sepsis or bacteremia. In carefully looking at the specimen you will find a distinct exfoliating condition of the endometrium of septic type. You can lift it up, as I could do, but will not through fear of injuring the specimen. In both uterine cornua are distinct evidences of placental retention. The title Dr. Boldt gave us would lead one to believe hysterectomy was done for sepsis superinduced by a gangrenous fibroid, which condition does not obtain in the specimen.

DR. HERMAN J. BOLDT.—The myoma induced the septic condition of the patient.

DR. S. MARX.—I take exception. It does not seem as if there were degenerative changes in the myoma situated in the lower border of the uterus. It presents an entirely different picture from the dark, bloody and gangrenous condition of the endometrium. From an impersonal standpoint, and judging the specimen, I believe we are dealing with a sapremia plus an exfoliation of the septic endometrium. The question arises whether curettage, if possible and done thoroughly, would not have saved the woman from the hysterectomy.

DR. BROOKS H. WELLS.—It matters little by what term the nature of the infection be designated for the indication to remove the uterus in this case was certainly clear. We find a fibroid mass blocking the uterine canal in such a way as to prevent drainage and to prevent any efficient examination or treatment of the interior of the uterus.

DR. HERMAN J. BOLDT.—Some years ago I read a paper before this Society in which I advocated the term "bacteremia" for the disease generally called "septicemia." This would always prevent the confusion which now so frequently arises. We know that when we speak of bacteremia, that there are microorganisms circulating in the blood. At that time I distinctly distinguished between a local septic condition and septicemia, or as it should be called, bacteremia. In the specimen presented there is a distinct septic focus, which being absorbed in the circulation caused very serious symptoms, resembling a true bacteremia, although the blood did not give a definite result. Its examination was negative. Had it been positive, the case would have been presented as "A uterus removed for bacteremia." One cannot say in looking at the specimen that it is a toxic uterus. The term given by me, a "septic uterus," describes it fully.

If the fibroid were not present in the cervix, it would have been possible to explore the interior of the uterus, and perhaps successfully remove the cause of the woman's illness. It would, however, be unsafe to enter any puerperal uterus with a small curette and work in the dark. So considering the whole clinical picture, the operation was the only rational procedure. The woman was getting worse, the temperature was rapidly rising, the abdomen was becoming more distended, she had had a very violent chill produced by the absorption of toxins.

DR. EDWIN B. CRAGIN.—Were you able to pass your finger above the fibroid?

DR. HERMAN J. BOLDT.—No.

DR. BROOKS H. WELLS presented the history of a case and sections showing

REGRESSION AND CALCAREOUS DEGENERATION OF CARCINOMA.

Mrs. H. P. was referred to me in December, 1898, for operation for an indeterminate tumor of the uterus which she had noticed for about a year, and which was causing pain and hemorrhage. She was a nullipara; gave her age as thirty-three, but looked much older. To the beginning of the present trouble her health had been good. There was no history of any pelvic inflammation and no evidence or history of syphilis or gonorrhea on the part of either wife or husband. There was no history of tuberculosis in the patient's family.

Physical examination showed heart and lungs normal; kidneys and urine normal; liver normal; spleen not enlarged; upper abdomen normal. Temperature was normal. The uterus was immovable in the pelvis with the fundus extending about two inches above the pubis and rough, irregular, and nodular in outline. I have no record of the condition of the cervix but the bimanual examination caused bleeding.

The clinical diagnosis was inoperable carcinoma of the uterus, but, to satisfy her physician and to give the patient the benefit of any possibility of error, I consented to an exploratory abdominal section. On opening the abdomen the fundus of the uterus was found enlarged and nodular, the nodules presenting the granular roughness and yellow-pink appearance common in carcinoma. These masses extended into the broad ligaments and to adherent coils of intestine and omentum. The accessible pelvic glands were enlarged. As it was plain that all of the neoplasm could not be removed the case was considered inoperable and the abdomen was closed after having removed a small nodule for examination. The microscopic examination of this nodule showed carcinoma of the glandular type. The patient recovered without trouble from her section and was sent home, her friends being given a gloomy prognosis.

Instead of growing worse she improved for a time and in consequence I was discredited and lost sight of her.

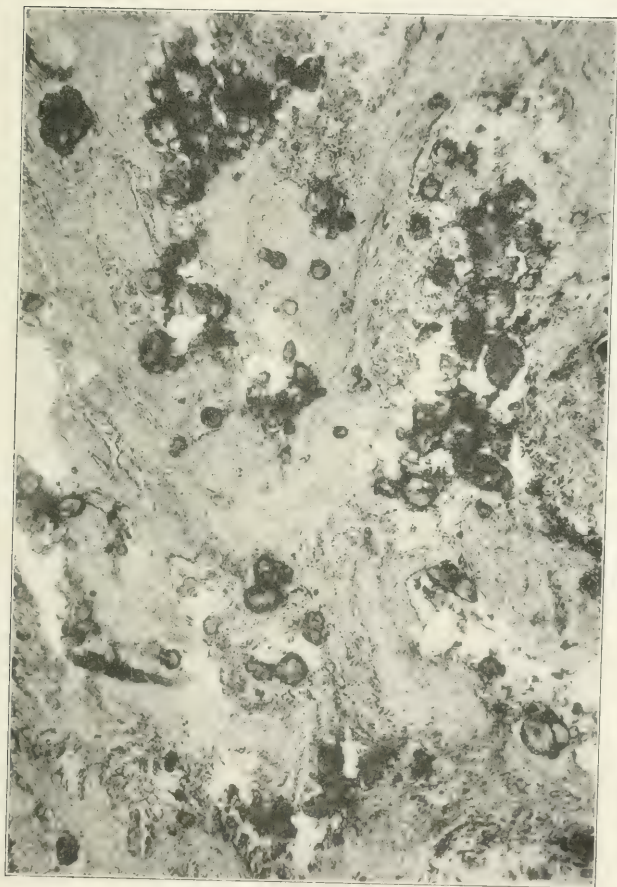
On June 25, 1903, four and a half years later, she came into my office. She was thin, pale, and weak. She said that after my operation she had improved for several months and had then failed rapidly. Toward the end of 1902 she went to an irregular in Brooklyn, who guaranteed to cure her for \$1400, and she was operated on by him by way of the vagina. She did not know what was done but thought her womb was removed. She was not cured, however, and had come back to me for an examination and an opinion. I found the lower abdomen occupied by a hard, irregular mass and above this many hard, irregular, movable bodies of varying size. On attempting a vaginal examination the finger found the vagina filled with a soft, friable, easily bleeding mass, whose base could not be reached, which distended the canal and came down to the perineum. A portion of this mass was broken off by the finger, but unfortunately, as it now seems was not submitted to the microscope, the diagnosis at that time seeming clear.

I did not hear from Mrs. P. again until in the winter of 1904-5 I accidentally learned that she was still alive and in the care of Dr. W. I. Cooke, of Port Washington, he being at that time connected with my clinic at the Polyclinic. To Dr. Cooke I am indebted for the further history of the case and for the record of the partial autopsy that was permitted. In a letter to me he says: "I saw Mrs. H. P. first in November, 1903, being called to check a flow of blood from the vagina. The bleeding was controlled by a gauze tampon. These hemorrhages occurred irregularly and were not always alarming. The vagina was filled with a softish mass which bled easily. The abdomen was distended. The contour of belly wall was uneven and abdomen seemed filled with irregular shaped masses, hard to the touch, easily felt between the fingers, movable and in size from a lemon to small particles. The number was beyond counting. She had severe obstipation. Temperature was normal. Lungs normal except for a moderate chronic bronchitis. Heart rate variable, ranging from 80 to 140, being governed largely by degree of pain in abdomen. Mrs. P. was rarely confined to bed and did all of her household work except washing. Her ups and downs continued until her death, March 22, 1905, at which time the masses in her abdomen had practically disappeared."

"Postmortem examination, body of H. P., age thirty-eight. Emaciation, extreme. Abdomen, sunken and smooth externally. On opening, intestine found much congested, small gut easily torn in places. Peritoneum covering intestinal and parietal wall studded with small, round, hard, white particles, size of mustard seed to a bean. The mesentery was a dense fibrous mass several inches in thickness. This was covered with masses of the little particles. The pelvis was empty with no evidence of uterus, tubes, or ovaries. There was no mass in the vagina and its mucous membrane was everywhere smooth.

PLATE I

AMERICAN JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN
MARCH, 1908.



WELLS.—CALCAREOUS DEGENERATION OF CARCINOMA.

The intestines contained some hard, dry, fecal matter, but no 'tumors.'"

Some of the "small, round, hard, white particles" were removed from various places in the abdomen and submitted to Dr. Jeffries, Pathologist to the New York Polyclinic, for examination. It was found that the little masses were so infiltrated with calcareous material that they had to be decalcified before sections could be made. Sections showed a glandular carcinoma infiltrated with many calcareous pearls. The carcinomatous tissue stained poorly.

The accompanying plate is from a photograph taken by Dr. Jaches, at the Loomis Laboratory, New York. It represents a section taken from a nodule that could be sectioned and shows carcinoma with much connective tissue. The dark, rounded masses are lime salts and the white areas portions where the calcareous particles have fallen out during the preparation of the section.

This case seems to me of great interest in that it demonstrates the possibility of the degeneration and natural cure of carcinoma. Cullen has recorded a case showing slight calcareous degeneration. Gaylord, I believe, has reported a spontaneous cure. We know that implantation carcinoma in mice at times may spontaneously disappear. Czerny (*Zeit. für Krebsforsch.*, Bd. v, p. 23) records the spontaneous disappearance of a recurrent glandular involvement following carcinoma of the tongue and a number of cases of cure following apparently inadequate operations for carcinoma. I have personally seen a number of cures follow apparently inadequate operations.

DISCUSSION.

DR. HERMAN J. BOLDT.—I remember one such instance that occurred a good many years ago. I opened the abdomen of a woman and found that her condition was inoperable. I excised a piece of the carcinomatous omentum. The diagnosis of carcinoma was verified by the late Dr. Carl Heitzman. The opportunity of making an autopsy some years subsequently was afforded. I insisted upon autopsy because I was curious to know why she lived so long with such an extensive carcinoma. On autopsy not a vestige of carcinomatous infiltration was found anywhere. That is the only instance in my experience in which a diagnosis of carcinoma was made positively, and at autopsy no carcinoma was found.

DR. JOSEPH BRETTAUER.—When I hear of spontaneous cures of carcinoma I always have some doubt as to the accuracy of the observation. Twelve years ago I started to do a vaginal hysterectomy. The microscopical examination of the specimen of the endometrium which was gotten by curettage proved conclusively that it was a carcinoma. Since then the specimen has been examined by many men with reputation as microscop-

pists and there is no doubt as to the diagnosis. This patient accidentally had gotten too much chloroform and stopped breathing. We had hard work to bring her to. Dr. Thomas, who was present as a consultant, advised not to proceed further with the operation. The uterine arteries had already been tied. The woman got out of bed in two weeks, and in three weeks was sent to the country and since that time has been well.

I have in mind another case that I curetted more than fourteen years ago. The microscopical diagnosis of carcinoma was confirmed by the pathologists; it was carcinoma of the cervix. She was curetted thoroughly and cauterized with the actual cautery, which was repeated four times at intervals of from six to eight weeks. That woman to-day is alive, well and at her work.

I opened another woman's abdomen in 1896 and closed it immediately as the conditions found were inoperable. There was a carcinomatous infiltration of the parietal as well as the visceral peritoneum from a primary carcinoma of the right ovary. She returned to Pike county, Pennsylvania, lost her husband and remarried two years ago, so I am informed.

DR. L. A. EWALD.—I think the case reported by Dr. Wells is a remarkable one. Very few have been reported by English authors. I think these cases of carcinoma have been proven to be such without a doubt under the microscope. Of course there are some cases of carcinoma that run for years and even though one finds carcinoma at operation it should be remembered that some of these patients may live three or four years in fair condition without operation. In Dr. Well's case there seems to be no doubt but that the woman did recover from her carcinoma. It is a very rare thing but it proves that carcinoma can go through a carcinomatous degeneration and disappear. The most striking thing in the specimen is the presence of miliary carcinoma. . . . We know that in such cases they die rapidly. The thing that should be emphasized is that, in these cases, we do occasionally meet with spontaneous recoveries.

DR. BROOKS H. WELLS.—I have but little more to add. When I was an assistant of Dr. Mundé he had a case which he diagnosed as carcinoma of the vagina, verified by the microscope; this occurred in a young woman. This growth in the vagina spontaneously disappeared, but Dr. Mundé would not report the case through fear that it would not be believed. The late Dr. Carl Heitzmann examined the growth and pronounced it carcinoma.

DR. ABRAM BROTHERS reported a

CASE OF IMPACTED PESSARY NECESSITATING REMOVAL IN
TWO PIECES.

Some years ago in my dispensary work I saw a woman who had passed the menopause. She had worn a pessary continuously during two years and was unable to remove it. On

examination I found a formerly soft, but now hard, round pessary buried in a circle of the vagina with granulating tissue practically hiding it entirely from view. Every attempt on my part to loosen or extricate it met with failure and I ordered the woman to come again when I would have preparations made for its removal, if necessary, in pieces; but I never saw her again.

Some nine years ago I introduced a hard, round pessary at one of my clinics into the vagina of Mrs. D., aged forty-nine, who was advised to have it removed and cleaned every few months. This was done with regularity until she passed the menopause at the age of fifty-two. From that time on she would remove and replace the pessary herself at varying intervals of time. After nine years she allowed six months to elapse before attempting the removal of the ring when she found all of her efforts of no avail. She called at my clinic at the Post-Graduate Hospital when I examined her. The ring seemed to be fairly movable in the upper vaginal canal but every attempt on my part caused a marked descent of the lower vaginal canal but the ring stuck fast. A week later I had her call again when after failing a second time to withdraw the pessary I cut it in two halves with bone forceps when its extraction became quite easy. I believe that the atrophy of advancing years in the vaginal structure was responsible in both cases for the curious condition met with.

DISCUSSION.

DR. BROOKS H. WELLS.—Some years ago when pessaries were more commonly used these cases were met with quite frequently. I have seen a number that had suffered from extensive ulceration, all women whose vaginae were contracting from the postmenopausal atrophy. The pessaries had been inserted before the menopause and forgotten. I have seen them of wood, glass, gold, and platinum, as well as of the ordinary hard rubber. The old Zwanck, or butterfly pessary, the Gehrung, which was formerly used for cystocele, and pessaries supported by external stems and belts were all very liable to cause deep ulceration, even in comparatively young women. Those pessaries are obsolete as the conditions for which they are employed are now treated with uniform success by plastic surgery.

DR. JAMES N. WEST.—I had an instructive experience ten years ago. A pessary was introduced into a woman at the clinic at the Woman's Hospital on account of a procidentia. She came back at the end of forty-eight hours suffering greatly and it was found that the uterus and vagina had passed through the pessary and become strangulated. There was a thickened edematous mass that looked as though it might be gangrene. The pessary had begun to cut into the vaginal tissues. After

attempting to restore the parts through the ring and failing, I advised the woman to go to the hospital at once, but she was stubborn and refused. I feared the consequences. But she agreed to allow me to treat her at her home. I took a man along to give the anesthetic and with a little wire saw cut the pessary into two parts. I restored the uterus and left orders for the use of an antiseptic wash. Two years after I saw her on the street and she was in fairly good health.

DR. C. G. CHILD.—Several years ago a woman was admitted to the City Hospital with the diagnosis of recto-vaginal fistula. Upon examination I found that eight or nine years previously a pessary had been introduced when she was in St. Petersburg. She had a recto-vaginal fistula. In the median line high up the pessary had ulcerated through the vagina and rectum; part of the pessary was felt in the rectum and part in the vagina and in between was a septum formed by the rectal and vaginal tissues which had again united. This septum was cut which allowed the removal of the pessary, and the recto-vaginal fistula was closed.

DR. CLARENCE R. HYDE.—I remember seeing a case in Strassman's clinic in Berlin, in which a butterfly pessary was removed after being in twenty-five years. The pessary was not removed by any scientific procedure, it was simply seized and withdrawn forcibly, and this was accompanied by a marked laceration of the vagina. Dr. Skene removed a large glass ball pessary which had been retained two years in the vagina of a maiden lady of advanced years. A pair of obstetric forceps of small size was applied and delivery accomplished as with an on-coming fetal head. The point of interest was the fact that such a large ball could have been introduced into such a small senile and virgin vagina.

DR. FLORIAN KRUG.—This discussion speaks in favor of early plastic operation on these patients. I think it is much better for the house surgeon to do the plastic operation than to insert a pessary.

DR. EDWIN B. CRAGIN.—You know that years ago when some of us graduated from the College of Physicians and Surgeons, all had to have preceptors. I remember a case in the hands of my old preceptor in the country in whom he had placed a cup pessary with external support. Although asked to return she disappeared for years and then came back with a vesico-vaginal fistula, with the stem of the pessary broken off and the cup retained above a constricting ring of vagina. As one of the features of the discussion this evening has been the method of removing neglected pessaries, the method employed by my old preceptor is of interest. He arranged a modified Buck's extension apparatus with cord attached to the retained portion of pessary and weight hanging over the foot of the bed. In this way the cup was finally removed.

DR. JOSEPH BRETTAUER.—I am reminded of a pessary that I

do not think is very well known here. The late Professor Breisky of Vienna used with success in procidentia, a hard rubber pessary which was egg-shaped. It was impossible to remove that pessary, if it fitted the case, except with a special instrument like a miniature obstetric forceps. The blades were introduced separately, locked as the obstetric forceps is and the pessary was easily extracted. I saw it used many times, and in fact have used it myself.

DR. ABRAM BROTHERS.—It is amazing how a small subject will sometimes bring forth an interesting discussion. I agree with Dr. Krug, that the proper treatment of uterine displacements is operative. The older I get the more I dislike pessaries, and that I believe this is the tendency of the profession to-day. Cases, however, will arise where patients are too much debilitated or opposed to submit to operation and here the pessary will have a place. I believe a word of warning is taught by the presentation of the impacted pessary. It is a dangerous thing to introduce a pessary at the menopause. It is known that during the climacteric and after the menopause the tissues of the vagina undergo atrophy and, therefore, subject women at this age to the possibility of an accident as shown to-night.

I have seen, like Dr. Brettauer that the ball pessary, if not looked at frequently, may become impacted and give rise to difficulties in removal. Therefore, my rule is not to use the pessary unless I can keep the patient under constant supervision.

DR LEROY BROWN presented a specimen of

PSEUDOMUCINOUS PAPILLARY ADENOMA OF BOTH OVARIES.

Mrs. A. G., age thirty-nine, and was first seen as she was entering the Woman's Hospital to be in my division.

Her condition was one of extreme exhaustion with a bluish-gray cast of features, arms cold to the elbows, pulse hardly perceptible and respiration very rapid.

After some hours of rest in bed and stimulation the pulse could readily be felt but was extremely irregular and ranged between 130 and 140. The respirations remained rapid.

An examination showed the abdomen much distended, with free fluid together with a large tumor extending to the umbilicus.

The patient stated that for two years she had noted an enlargement of the abdomen and that this had become more marked during the last year. At times there were severe attacks of colic. The present attack came on two weeks before coming into the hospital, at which time while at work, she fainted from the pain, and was taken to Bellevue Hospital under a diagnosis of possible pneumonia. She remained in this institution for a short time, discharging herself on account of fear.

An examination of the chest failed to show any evidence of inflammatory condition.

After three days' rest and stimulation, the condition not having materially improved, she was given an exploratory operation.

The free fluid which was of the tenaceous, sticky character, was liberated and cleared out as much as could be. The large tumor felt was of the right ovary. In its contracted state it measures 19 by 18 cm.; in the fresh state it was much larger. There were no adhesions or implantations. At the time of its removal a similar though smaller tumor of the left ovary was recognized. This filled the true pelvis. It was not disturbed on account of the patient's condition, not knowing the extent of any adhesions or implantations.

The recovery was even and the physical condition showed an astonishing improvement.

Three weeks after the first operation the abdomen was reopened for the removal of the tumor of the left ovary. The tumor had perceptibly increased in size, filling and projecting beyond the true pelvis. This also had a good pedicle, was easily removed and there were no implantations or adhesions present.

At the second operation a close inspection was made of the peritoneum and no where had any implantations taken place.

The patient was discharged three weeks later in full physical health. Both tumors are made up of small cysts with papillary outgrowths existing between the cyst walls.

The pathological reports on both specimens by Dr. Jessup, pathologist of the hospital is as follows:

The specimens have both been mounted in the gelatine medium and are presented together with the slides for inspection. Papillary adenoma of this character in about 50 per cent. of the cases occurs on both sides.

They can be regarded as giving a benign history in that they show very little tendency to form new colonies by implantation.

Kelly states that in seven cases he found implantations in one and in this the secondary colony was not of a papillary character but were in the forms of minute glassy cysts.

This class of tumors are of the well-known polycystic type but differ in the absence of the large cyst, this being replaced by many small ones. They also differ from the well-known cysto-papilloma in that the papillary outgrowths chiefly occupy the spaces between the cysts. The pseudomucin present in such abundance in the ascitic fluid and in the contents of the cysts has been for some time shown by Pfannenstiel to be a secretion of the epithelial cells and not a form of degeneration.

The microscopical examination revealed the following:

The papillary outgrowths show stratified cylindrical epithelium thrown up into folds and secondary folds.

There are islands and finger-like projections of tissue surrounded by epithelial cells, cylindrical in type and arranged for the most part in a single layer. Nuclei are oval. Epithelial

border is well defined but presents a very irregular outline, projecting in cauliflower-like masses. Stroma is composed of a loose connective tissue with oval nuclei. In many places the nuclei are scant and the intervening tissue stains very red, having a mucoid or colloid appearance. In some places the connective tissue has been entirely replaced by a homogeneous structureless material staining deeply with eosin. Cyst contents are homogeneous colloid material.

In presenting these specimens I have desired to bring out the fact that they belong to that class of papillary adenoma running a benign course, in so far as no implantations were found in spite of a two years' history.

The first operation was of necessity rapidly done on account of the patient's poor condition, and no close examination was made for secondary implantations. At the time of the second operation for removal of the tumor of the other ovary I had more time at my disposal and a close examination was made, giving a negative finding. The pseudomucinous character of the ascitic fluid was from the secretion of the epithelial cells.

DISCUSSION.

DR. JOSEPH BRETTAUER.—I should like to congratulate Dr. Broun upon his judgment, seeing another tumor and leaving it. It showed splendid judgment under the circumstances.

DR. BRETTAUER reported a case of

ACUTE GONORRHEIC INFECTION OF A LARGE OVARIAN CYST.

The patient, S., is twenty-nine years of age. Menstruation began at sixteen and was irregular up to the time of her marriage five years ago; since then it has appeared with a fair degree of regularity, the last period on Sept. 26. She was never pregnant. The patient was first seen on Oct. 24, when the following history was obtained: About one month ago, moderate pain set in all over the abdomen, not sufficiently severe, however, to confine the patient to bed. After ten days of malaise, the pain became distinctly localized in the lower left region of the abdomen; slight pain on urination was also noted and a whitish discharge, to which the patient had been subject since girlhood, became more profuse. A physician was then consulted, who found her with a temperature of 103; she was put to bed and ice was applied to the distinctly enlarged abdomen. The pain gradually subsided, but the temperature always varied between 101 in the morning and 103 in the evening.

Upon examination I found the abdomen evenly enlarged to the size of a six months' pregnancy. A little above the left iliac fossa there was a distinct, separate, indurated area, which was rather painful on pressure. Bimanually, a small uterus could be felt distinctly high up in the pelvis, with the cervix behind the symphysis and the fundus to the right. The abdominal enlargement was explained by the presence of a large

cystic tumor filling the pelvis and reaching up to the umbilicus and occupying the region of the left lower abdomen. By vagina, nothing could be felt of the separate resistance over the left iliac fossa. There was no urethral discharge; from the cervix a moderate amount of yellowish secretion was obtained, which contained no bacteria.

In view of the fact that the husband had contracted an acute gonorrhea just about the time of the onset of this condition, the diagnosis lay between an ovarian cyst with some circulatory disturbance, such as a twisted pedicle, or a pre-existing ovarian cyst with an independently developed, recent gonorrheal exudate.

On Oct. 25, the patient was admitted to the hospital. There were then present 24,000 white blood cells, 72 per cent. of which were neutrophils. She was kept under observation for ten days, during which time the resistance and separate prominence on the left side became more distinct, but less painful. The temperature persistently remained between 101 and 102.5, pulse between 110 and 130. Intestinal or other peritoneal symptoms were entirely absent. On Nov. 4, the white blood cells numbered 27,000, of which 80 per cent. were neutrophils.

Upon opening the abdomen on Nov. 4, a large, unilocular, ovarian cyst was found, slightly adherent on its upper and median surface to intestines, and firmly adherent on its outer surface to the parietal peritoneum and sigmoid flexure. The greatly elongated left tube was acutely inflamed in its distal half only, being thickened and adherent to the sigmoid flexure. When the cyst was emptied of its turbid, sero-purulent fluid, the adhesions were readily separated and as the right ovary was also found cystic, hysterectomy was performed. Owing to the presence of large raw areas, only the stumps of the right broad ligament could be covered with peritoneum; the raw surfaces and stumps on the left side were covered with gauze led out through the vagina.

The patient made an uninterrupted recovery and was discharged on Nov. 26. The interesting feature of the case is the fact that gonococci were found on spreads as well as in cultures, in the fluid contained in the large cyst, in the distal end of the left tube and in the uterine cavity. Repeated examinations before operation and during convalescence never revealed any gonococci in the urethra, vulva or vagina. A further point of interest is the complete absence of inflammatory conditions in the right tube, and in the uterine half of the left tube.

DISCUSSION.

DR. HERMAN J. BOLDT.—The main and interesting feature centers in the fact that the case was an acute one and yet no cocci were to be found in the genitals. Of course, in old chronic cases, this is a common occurrence.

DR. CHARLES JEWETT presented notes on seven cases illustrating

OPSONIN THERAPY IN SEPTICEMIA.

Two of the following cases occurred in the service of my associate, Dr. Wm. P. Pool, at the Long Island College Hospital. Both were mild infections. Treatment with bacterial vaccines was carried out under the direction of the pathologist, Prof. J. M. Van Cott.

In the first case 10 c.c. of antistreptococcic serum were also given subcutaneously. Both patients recovered.

The third case was one of pyemia seen in consultation. The vaccine treatment was conducted by Dr. W. H. Woglom. This woman died on the nineteenth day after delivery. The dates and the result of the vaccine injections are shown on the accompanying temperature charts.

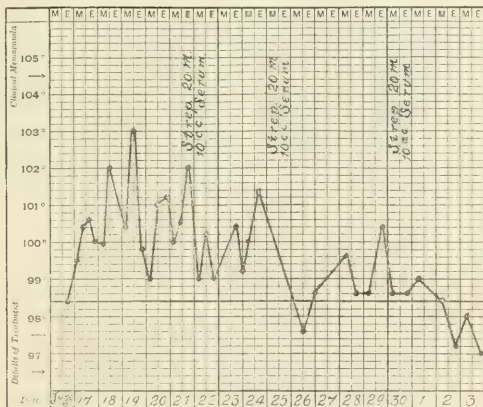


CHART I.—MRS. K.

Mrs. K., delivered June 13, 1907. Admitted June 16, with general septic infection. Maximum daily temperature 102° F. Blood culture showed streptococcus.

Three injections were given. The temperature fell after each, remaining practically normal after the third.

Mrs. J., admitted Oct. 3, 1907, with septicemia, a well marked pelvic exudate and in violent delirium. Had been ill one week before admission. Patient gave a history of supposed pregnancy

with attempt at abortion by intrauterine interference but there were no physical signs of recent uterogestation.

A blood culture on the seventeenth showed staphylococcus albus. The delirium, which had persisted for about one week, subsided after the first vaccine injection. The temperature fell after each of the first two injections but rose slightly after the third, soon becoming normal, however, and so remaining.

Mrs. D.—Here no apparent improvement followed the injections.

Manual delivery had been carried out at the seventh month owing to partial placenta prævia and profuse bleeding, the

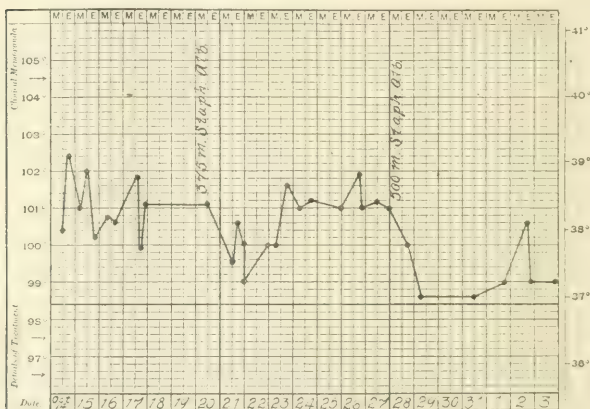


CHART 2. MRS. J.

patient being nearly exsanguinated. The uterus was packed for twenty-four hours to forestall postpartum hemorrhage.

A matter of curious interest in this case is the fact that the next preceding pregnancy, two years before, was complicated with complete placenta prævia.

In the first two cases the bacterial emulsion was prepared from the patient's blood. In the third a stock preparation of staphylococcus albus, aureus and citreus was used at the first injection and a polyvalent vaccine representing nine strains of streptococcus at the second and third, after the latter organism had been recovered from the uterine secretion.

The opsonin method has been used in several other instances of septic infection at the Long Island College Hospital. The best results have been observed in local and in mild infections.

DR. CHARLES JEWETT.—The method is still under trial and its value is by no means as yet established. Most benefit has been noted in mild and in localized sepsis, little in general infection.

DR. R. L. DICKINSON read a paper on

HIGH RECTOCELE AFTER PERINEAL REPAIR*

DISCUSSION.

DR. FLORIAN KRUG.—Instead of using the stick sponge, there is no rectocele operation done on my advice but that I leave the left index finger in during the entire operation; I direct the entire operation with my finger in the rectum. Rubber gloves expedite the work. I can do better work by knowing exactly what I am at. The index finger in the rectum saves a lot of time while the assistant does the work that that hand would do. I can feel everything with the finger in the rectum, while the assistant does all the tying. I am sure that I will not puncture the mucous membrane of the rectum. Many years ago Tait told us that anything could be done in one and a half minutes by a flap operation but that was ridiculous. The same surgical principles should be used as in hernia operations and that is why in private practice I do my own work, but in the hospital I instruct the house surgeon.

DR. BROOKS H. WELLS.—Dr. Dickinson's suggestion is a good one. These cases require great attention to small details. I do not believe that permanent good results are obtained by those surgeons who finish this operation in three minutes.

DR. G. G. WARD, JR.—A point of interest to me in Dr. Dickinson's remarks is that the old Emmett operation is not sufficient in the majority of the cases in which it is used to cure the rectocele, especially if high up. While it accomplishes the purpose of uniting the torn, anterior fibers of the levator ani, and attaches them to the perineal body, the denudation of the vaginal sulci allowing of the proper suturing of these fibers, it does not do much for the rectocele proper. In almost all cases, where there is much failure in the function of the closing power of the orifice of the vagina, there is apt to be a rectocele. There is present a subinvolved vagina, and it therefore is too large. There is apt to be a thinning of the posterior vaginal wall in the middle line by reason of the impact of the fecal column against the posterior wall of the vagina. Personally I prefer to employ a denudation, which is practically the old Hegar denudation, well up the posterior vaginal wall. The angles being wide, the denudation uncovers the sulci, and thus accomplishes all that the Emmett operation will accomplish. At the same time it enables you to do the work on the rectocele. The suggestion of the stick sponge I believe is an excellent one; I have never adopted it. Dr. Krug's procedure I have adopted frequently, but prefer to have my assistant insert his finger for the guide, allowing me the free use of both hands and less risk of infection.

* See original article, page 347.

DR. L. A. EWALD.—We are much indebted to Dr. Dickinson in calling our attention to this condition of the rectum. There is no doubt but that many cases are overlooked. It is left to the operator to determine how high or how low to dissect the mucous membrane of the vagina.

One of the principal things has not been emphasized, that it is necessary to correct the position of the uterus. The correction of the position of the uterus is a very important thing; without it it is almost impossible to correct the cystocele or rectocele.

DR. R. L. DICKINSON.—I formerly used the finger as a guide to deep suturing but I found that I was handicapped, and once in a while I broke the aseptic safety rules by that method. The finger is too small. It does not roundly distend the rectal wall.

HISTORY CLIP.

I should like to present a thing of "historical interest." You all know that there is no greater little nuisance in hospitals than the various means of holding and hanging, and rendering accessible and keeping clean the history blanks in the wards. There seem to me to be but two ideal methods. All the clips in use are vastly heavy or clumsy, like the enameled iron clips, or so awkwardly project, like the Shannon file, that no nurse can carry any number at once. This cover is of aluminum. It is a portfolio 12 x 11 inches, with a spring back so arranged that one can readily remove or replace any sheet, or the whole. It allows of writing on both sides of the sheet. Where the bedside notes are bound with the rest of the history, as is not uncommon, this thin paper with entries on *both* sides greatly lessens the bulk of history volumes. This holder, called Sieber & Trussell (St. Louis) No. 675, costs \$1.60 a piece in hospital lots. That seems excessive, but the aluminum folder goes along from history to history and year to year, indestructible, sterilizable, portable, handsome, clean. A colored seal designates the service, and a pasted label carries the patient's name.

The other method is a complete adoption, in the wards, of the vertical file system in use in offices. A manila folder or portfolio holds each history. Those of one ward stand on edge in a box or drawer at the nurse's desk. The expense is small, the folders costing less than a cent a piece, and a transfer box, opening by a flap top, thirty-five cents. Exposure of a history or temperature chart at a bed-head is handier for a visiting than to run over his bunch of cases at the nurse's desk, or to have her hand him each one as he reaches the bed, but it is too public and gives information to patient and visitors in an undesirable fashion.

TRANSACTIONS OF THE SECTION ON GYNECOLOGY.

NEW YORK ACADEMY OF MEDICINE.

Meeting, of February 6, 1908.

The President JOHN A. WYETH, M. D., in the Chair.

The special topic of the evening was

A REVIEW OF RECENT ADVANCES IN OBSTETRICS AND GYNECOLOGY.

DR. JAMES EWING said that about a year ago, before the Section on Obstetrics and Gynecology, he had reported some cases of

CHORIOEPITHELIOMA

referring to the existence of two histological types of tumors in this group, and concluding that careful microscopical study could always distinguish between these tumors and form a basis for exact prognosis and treatment. Since that time he had opportunity, through the kindness of his colleagues, to study four more cases and from these he was more firmly convinced that this group of tumors could be subdivided and different prognoses established on their histological structure.

Briefly, the conclusion reached was that chorioepithelioma includes three rather distinct tumors, which are distinguished by their gross appearance, histological structure, prognosis, and indications for treatment. That there was need of a subdivision of these tumors was evident from the very uncertain and contradictory opinions at present maintained regarding their structure, prognosis and treatment.

In 1895 Marchand pointed out that there were two types of chorioepithelioma, one typical, the other atypical, and this division has been generally recognized. Yet while Marchand stated that the atypical variety, composed chiefly of large giant cells, was comparatively benign, and Menge had stated that it was a crime to remove the uterus for this variety, because it was benign, all writers had not agreed as to the position of the atypical chorioepithelioma.

The typical chorioma of Marchand had shown extreme variation in structure and clinical course. While some of these had proved very malignant, Schlagenhauser, in 1899, had pointed out that recovery might follow after (1) spontaneous extrusion of the tumor from the uterus; (2) removal by curettage; (3)

partial removal by the knife, a part of the tumor having been left in the pelvis. At least six cases were on record in which recovery followed where pulmonary metastases were believed to have occurred, although the existence of genuine metastases, while probable had never been proven. On the other hand some of the tumors were excessively malignant and with them the results of operation were so bad that a recent writer, Schmauch, had said it was a crime to remove the uterus in such cases. Here then was a tumor with which hard words met the ill-advised surgeon who ventured to operate, on one hand because it was so benign, and on the other because it was so malignant. Moreover the pathologist had been warned to keep out of the controversy because there were no histological signs on which the different prognoses could be determined. Here was a unique situation in tumor diagnosis, in which there was no relation between histological structure and prognosis. For it was a very general rule that with proper experience the prognosis of a tumor could be told pretty accurately from its histology. It seemed to be time, therefore, that a further attempt be made to subdivide these tumors on their structure, and to determine if a given structure did not carry with it a definite prognosis.

The speaker's cases seemed to show that such a relation actually existed with the different forms of chorioma, and the following classification and nomenclature was suggested.

1. *Syncytioma. Atypical chorioma of Marchand.*

This tumor produced a more or less diffuse infiltration of the myometrium, or a large intrauterine tumor, leading to marked enlargement of the uterus, but not tending to perforate the organ and not giving metastases. Histologically the tumor was composed of large syncytial wandering cells in the wall of sinuses and in the musculature. Hemorrhage, cachexia, suppuration, and perforation by the curette might prove fatal. Curettage cured except in advanced stages. In early stages the prognosis was good.

2. *Chorioadenoma destruens. Malignant placental polyp.*

This tumor tended to infiltrate the sinuses of the uterus, considerably enlarging the organ, but not splitting it by a compact growth. Metastases occurred in lungs and vagina, but recovery might follow, certainly after vaginal metastases or after partial removal, possibly after pulmonary metastases. Histologically the growth showed *villi*, *Langhans' cells* and *syncytium*, in more or less orderly arrangement. Hence as the placenta was a gland the term adenoma applied to this tumor. The natural course was death by hemorrhage and cachexia. The uterus should be removed, unless the growth was attacked early and the loss of the organ was a serious consideration to the patient. Spontaneous extrusion (?), curettage, and partial removal had cured.

3. *Choriocarcinoma.*

This tumor produced a relatively small circumscribed growth

in the musculature, tended rapidly to perforate the uterus without greatly enlarging it, and to cause local and pulmonary metastases. Histologically villi were absent, Langhans' cells and syncytium present in masses, but often imperfectly differentiated. Morphological signs of anaplasia and malignancy were always marked. The atypical and diffuse growth of cells yielded a structure to which the term carcinoma was commonly applied.

Tumors of this structure were probably always fatal, but further observations were necessary to demonstrate this view. Operation, especially curettage or partial removal, sometimes seemed to accelerate the course, and it was not certain that operation had ever cured. The uterus should be removed as soon as possible and responsibility not left with the patient.

Infraction of the lines laid down in this classification might result from (1) inability to determine the true position of the tumor, from insufficient curettings; (2) the occurrence of intermediate types of tumors; (3) differences in structure in different portions of the same tumor.

None of these possible sources of error seemed to overcome the advantage of recognizing a definite relation between structure and prognosis in this group of neoplasms, and of emphasizing this relation by a suitable nomenclature.

DR. EWING then illustrated the different types of these tumors by lantern slides.

RECENT ADVANCES IN OBSTETRICS.

DR. EDWIN B. CRAGIN read this paper. (See page 305.)

DR. HERMANN J. BOLDT said that while there may not have been as much progress in gynecology of late years as in some other branches of medicine yet there were sufficient to make it worth while to allude to them. Not so many years ago it was no uncommon occurrence for an operator to exhibit as trophies of his skill, uterine appendages that were practically normal. Most of the patients recovered from the operation, but the greater number were not benefited, many were made worse, but a few were made better. In seeking the reason for these unsatisfactory results we are inevitably brought to the conclusion that the indication for the operation was based upon poor judgment. Physicians of many years' experience have passed the operating furor and their judgment has been improved. Following the period of indiscriminate extirpation of the pelvic organs came a period of ultraconservatism, and though conservative procedures sometimes act to the detriment of the patient, they have the advantage that the radical operation may be subsequently done. To illustrate; a patient with bilateral pyosalpinx of the chronic variety nearly always has chronic endometritis and it is safe to state that she is also sterile, therefore such pelvic organs are useless to the patient. If she is

near the climacteric and if the symptoms arising from the diseased condition indicate surgical intervention, then the only correct procedure is a radical operation. If the patient is in her thirties or younger the physical effect of such an operation is likely to be severe and then it is better to exsect the Fallopian tubes, and if a zone of seemingly normal ovarian stroma is still present exsect also the diseased area of ovarian tissue and implant the apparently normal part into the uterine cornu, from which the interstitial part of the tube also should have been excised. Subsequently the cure of the metro-endometritis may be attempted by local means. Psychical disturbances are thus avoided and if necessary the more radical operation may be resorted to after the lapse of a sufficient length of time.

The greater conservatism is also exemplified in operating for tubal pregnancy. Some now remove only the tubes, retaining the ovary. Under favorable circumstances some operators content themselves with splitting open the affected tube and removing the conception product. Most operators are agreed on this kind of conservatism of the pelvic organs, but not so in conservative operations for multiple myomata. While the procedure has been tried frequently the results thus far have been far from satisfactory. With pedunculated tumors and single interstitial tumors of moderate size we can with safety do a myomectomy. With regard to myomatous tumors we are learning more and are finding them not so innocent as we formerly thought.

In operations for cancer of the uterus much has been done to advance the curability by operating more radically, not relying upon the extirpation of the affected organ alone but going on and exsecting the parametria and the glands and in some cases even a part of the ureter. It has not yet been settled whether the longevity of patients afflicted by carcinoma of the cervix is increased by such a procedure. He had done the operation a number of times but was not favorably impressed by it because it seemed impossible to remove all the invaded gland. Our knowledge of chorioepithelioma may be classed among the late achievements in gynecology. We have learned to recognize it sufficiently early to save many lives by immediate radical surgical intervention.

Marked progress has been achieved in the treatment of purulent peritonitis. Those who have tried the modern method of nonextensive intervention have proved that the rate of mortality is much lower with this procedure. After removing the primary cause of the peritonitis no further attempt should be made to rid the abdominal cavity of the purulent secretion by sponging and flushing because the time thus consumed is too long and the traumatism too great and it is even then impossible to remove all the purulent secretion. One should content himself with placing a drain in the cul-de-sac of Douglas. Rapid work is essential. When the patient is put to bed she should be

placed in a semi-sitting posture. From that time on continuous instillation of saline solution should be used. He found the best technic to consist of an icewater cooler filled with hot saline solution and kept at a temperature of 110° F. The quantity added should be noted so that one will know how much the patient has absorbed. The container is placed alongside the bed and a rubber tube with a small sized rectal point is attached. The flow should be regulated and should not be faster than a quick dropping. The nozzle is inserted into the rectum and the instillation continued steadily day and night. He had had one patient who absorbed fourteen quarts in twenty-four hours.

We have learned that a simple operation on the vaginal mucosa does not suffice to cure a patient of cystocele associated with descent of the anterior vaginal wall. It is necessary to separate the bladder from its cervical attachment and displace it upward and then attach the vagina to that part of the cervix to which the bladder had been previously attached.

THE PRACTICAL APPLICATION OF OUR RECENT KNOWLEDGE IN OBSTETRICS.

DR. EDWARD REYNOLDS, of Boston, read this paper. The methods of practice which he wished to present were based upon beliefs that the mortality of Cesarean section varied so greatly in accordance with the period of labor at which it was performed that: First, the mortality of the section late in labor was too great to permit of its performance in the interests of the child alone. Second, the maternal mortality of the section performed even so early as the end of the first stage in labor was greater than that of an ordinary high forceps or version. Third, the mortality of the section done at the time of election in advance of labor, or at its very beginning, the primary section, was so low that it was a safer operation for both patients than difficult high forceps or version when performed for mechanical obstacles. He necessarily excluded from consideration cases in which either form of operation was performed for other than mechanical obstacles. His own experience with section now comprised thirty cases, all without mortality. The smoothness of convalescence, the comparative absence of discomfort to the patient, and the absence of anxiety had been most marked in the cases done before labor, and in the other cases had varied in proportion to the extent of labor permitted before operation. He divided the cases into three classes: those done before labor (primary), early in labor (secondary), or late in labor (late sections). His completed tables contained 289 cases operated upon by twenty different operators; of these eighty-two were primary, 158 secondary, and forty-nine late. The forty-nine late cases showed a mortality of over 12 per cent. The 158 secondary cases showed a mortality of 4 per cent. The eighty-

two primary cases showed a mortality of slightly over 1 per cent. His remaining proposition was: First, that a section undertaken under every surgical advantage in advance of labor was less dangerous than one performed after even a few hours' endurance of the exhausting physiology of labor, and under the technical conditions incident to such work. Second, that the section performed after a full test in labor had demonstrated the approaching failure of the natural forces was an operation favorable to the child, but more dangerous to the mother than the intrapelvic methods of extraction by high forceps or version. There could be no plainer or more obvious deduction than that *when the Cesarean section was necessary, it was desirable that it should be determined upon in advance, and performed as a primary operation.* The results of the primary section when performed *on healthy women* for merely mechanical obstacles were the highest possible degree of safety for the child, a maternal mortality risk which was probably not greater than that of difficult high forceps or version, and an entire absence of the extensive vaginal trauma, and consequent morbidity, a percentage of which was inseparable from the difficult intrapelvic operations.

The secondary Cesarean section had a considerable maternal mortality, certainly a higher mortality than the intrapelvic operations, and an absence of maternal mortality should be their first consideration. He therefore ruled out the performance of a secondary section as an operation of choice. The mistakes of the past he believed to have been due chiefly to an overdependence on measurements of the pelvis alone and to overconfident attempts to determine this important question at a single sitting. To attain really accurate results they should estimate with equal care the *pelvis*, the *passenger*, and the probable *maternal power* as a propelling engine; moreover, to attain any just estimate of one of these in difficult cases it was usually necessary to see the patient repeatedly during pregnancy, and when it was possible before pregnancy. The whole matter of the estimation of the shape of the pelvis was as yet in its infancy. A size and shape of pelvis which would permit the passage of a given head with entire safety to the mother after it had been moulded by efficient and powerful uterine contractions might be impassible to the same head either by spontaneous delivery or by the intrapelvic operations in the absence of propelling power sufficient to effect the needed modifications of the shape. The study of the propelling power of the uterus was then a matter of the most absolute importance. It was estimated in two ways. First, the most valuable, by the history of previous labors in multipara. The woman who had once had strong, successful, sthenic labor would always have propulsive pains. Such a woman would overcome any moderate obstacle. In primipara their power of estimating the probable results of labor was more limited.

In conclusion he believed that to avail themselves of all the resources of their art in the management of difficult labor they should see the patient at intervals during pregnancy and where the circumstances permitted before pregnancy; that was, in cases where the unfortunate history of previous labors or the existence of evident deformity had brought the question of the safety of labor into consideration before another pregnancy had occurred. After the employment of certain methods a final decision should be made and rigidly adhered to, *i.e.*, if it was in favor of Cesarean this should at once be performed; but if, on the other hand, the case was thought better fitted for labor and the intrapelvic operations, the patient should be given a full test in the second stage of labor; after which the Cesarean section was the more dangerous procedure, and if any operation became necessary it must be forceps or version. The fault in their past management of the Cesarean operation had been that they had too often adopted or refused it without sufficiently painstaking observation, and also without a full recognition of the superior safety of the primary section. Of course such detailed observation of pregnancy as had been described, and such painstaking investigation of the mechanical conditions would be manifestly impracticable, and indeed unnecessary, in the routine practice of obstetrics in multipara. It was applicable only to cases in which difficulty could be reasonably expected. How then should they decide in which cases such care should be used? This was from a practical standpoint the crux of the entire question, and was one which involved the education of the public and the general profession to a realization that the old basis of practice, *i.e.*, the belief that the majority of labors turned out all right and that the few catastrophies which occurred could only be regretted, it was not in accord with the spirit of modern medicine which demanded that even rare, avoidable catastrophies must be foreseen and prevented. They must teach the general practitioner also that in difficult labors no obstetrician, however skilful, could obtain a low percentage of mortality, fetal or maternal, if he was only called in after arrest had occurred. It was not in the least necessary that all labor cases should be referred to specialists, but they must teach the general practitioner how to select the cases in which danger threatened but might be forestalled by an early and accurate comprehension of the circumstances. All primipara ought really to be examined for determination of the mechanical conditions during pregnancy, and the more intelligent portion of the laity would be already prepared for such a routine if the profession were ready for it; moreover, in the case of women with plainly normal conditions the fact was soon apparent, the examination need not be unduly tedious or exacting, and this custom of a routine examination of primipara was evidently growing in repute; but it was not well to try to effect too much at once, and to those practitioners who were

not yet convinced of the necessity for a routine examination of all primipara, they ought at least to insist upon the necessity for determining the mechanical conditions during pregnancy in all primipara whose general appearance suggested the possibility of mechanical difficulty, and in all multipara who had had difficulty. All primiparae of very small stature *should have a determination of the mechanical conditions during pregnancy.* It was in this type of women that the symmetrically small pelvis, the pelvis nana, was to be looked for. All primipara who had done heavy muscular work during the period of development, and more especially all of those who presented a short, squat, short legged appearance *should have a determination of the mechanical conditions during pregnancy.* It was in this class of women that the flat pelvis were particularly frequent. All primipara with the narrow hipped, long straight legged, flat backed, boyish type of figure *should have a determination of the mechanical conditions during pregnancy.* It was in this type of women that the true justomino or neutral type of pelvis was specially frequent. All primipara with bandy legs, protuberant buttocks, prominent abdomen, and unusually hollow lumbar region *should have a determination of the mechanical conditions during pregnancy.* Such women were often rather wide hipped, markedly feminine in figure, and at first sight suggested favorable labor; but it was in such women that the pelvis with excessive inclination of the brim and exaggerated curvature of the pelvic axis were mostly found. This pelvis had attracted no attention until of late years. It was frequently of good size and was then unimportant, but its shape was such as to make very slight diminution of its size productive of an unexpected degree of difficulty in labor, and it was therefore worthy of note. These pelvis were the more important in that in them the intrapelvic operations had necessarily a very high fetal death rate, and a very high maternal morbidity rate. All primipara of delicate general health *should have a determination of the mechanical and constitutional conditions during pregnancy.* Many of these women had easy labors but in them even moderate mechanical difficulties assumed importance and, moreover, the medical oversight of their pregnancies always demanded great care. Multipara who had had easy previous labors demanded no special care, but all multipara who had had even one difficult or disastrous labor *should have a determination of the mechanical conditions during pregnancy.* Few men would doubt the wisdom of these propositions when placed before them on paper, but to effect their present adoption in practice was quite another matter. To practically secure this benefit to humanity they must look to their own conduct, they must teach the general practitioner that to seek such an opinion during pregnancy did not mean that the specialist would assume the charge of the normal labor if his examination showed such to be the probable outcome of the case. It was a

fact that twenty-five years ago the care of normal labor by practitioners who were otherwise well equipped, was frequently so poor as to furnish a basis for the position that all labor should be attended by specialists, but this was not the case to-day. With the advent of asepsis and what he believed to be the general advance in professional equipment and sense of responsibility for results, the average of obstetric practice had risen greatly, and there were to-day great numbers of practitioners who were quite sufficiently equipped for the intelligent care of ordinary labor, and for the performance of the ordinary obstetric operations. They ought to recognize this change. In all other specialties the conditions of practice had taught them the necessity of not absorbing the management of cases which were referred to them merely for an opinion. If the obstetrics of the future was, as he believed, to assume a more desirable position as a specialty than it had ever heretofore held, it would be in part because of the change which was coming over their methods of practice; and in part because its practitioners would find themselves not only forced but glad to assume the position characteristic of all other specialists, *i.e.*, those younger obstetricians who desired to take charge of normal labor, and he thought that established specialists would in the future decline normal labor. The great majority of general practitioners now desire, and probably would always desire, to attend the ordinary labors which occurred in the course of their practice; on the other hand, they were not, and they knew they were not, at present competent to make a really thorough determination of the mechanical conditions during pregnancy. It was then setting a very high, and it was to be feared an impossibly high, standard of conduct, to expect them to refer any considerable proportion of their patients, even for an opinion, to men who were their most dangerous competitors for the care of normal labor. When obstetricians were ready to take the position that under the conditions of to-day attendance on normal cases did not demand a mysterious and unrecognized special knowledge, they would find that the general practitioner was more than ready to seek their advice on the exceptional cases whose results were so apt to be unfortunate, and that he would be ready to seek such advice in advance, or at any other period which the specialist might recommend. The moment this was the case there would be an abundance of work, and of high class work for the professed obstetrician in attendance upon difficult cases whose difficulty had been determined in advance.

DR. WILLIAM M. POLK said in reference to Dr. Ewing's remarks that the ordinary practitioner was not in a position to enter into the niceties of laboratory work, nor would Dr. Ewing expect him in the early stages to be able to do more than picture to himself what had been presented here to-night. It came to them as a practical bedside problem, how were they to anticipate this

dire calamity? The only way was to lay stress upon the urgency of a very close watch upon every woman whose uterus had not undergone proper involution. It was the duty of every man who attempted to practise obstetrics to look into this. If such a state of things existed, it was *prima facie* evidence that something was wrong. If to this was added such antepartum condition as a mole, or later, a prolonged continuance of the lochia, there must be something in the uterus requiring especial attention, and a positive diagnosis should be made there and then. Taking all in all this paper emphasized in the strongest manner possible the obligation of keeping close watch upon every woman we confine.

When Dr. Cragin spoke of the mechanics of delivery and the mechanism of labor, some of us realized the limitations of time did not permit him to enter into a full discussion; but we would have been pleased if, out of his large experience, he had told of the advantages to be derived from slow forceps delivery. There had never been anything in obstetrics so potent for good as the obstetric forceps; but all of us realized that when used with a rush for the purpose of terminating delivery as quickly as possible, they were capable of dangers not limited to the external passages, for apart from the dangers of sepsis and lacerations, they were responsible for the great number of sad cases of prolonged and inoperable procidentia, the vagina and bladder being often in such rush cases (with the head high up) torn from the lateral attachments. The fact that forceps delivery could be extended over an hour or longer until the uterus was coaxed to do its duty seemed to him to be worthy of earnest consideration.

There were two subjects he said he would like to touch upon. One was the disorders of menstruation in young women which was so frequently the ground work of many of those after-conditions, such as diseased ovaries, which led not infrequently to those wretched cases of neuroses which revolved around ovarian pain. He was convinced that there were numbers of young women beginning menstruation under conditions which were far from hygienic, who carried on this function under conditions of ignorance as to its true significance and possible underlying pathological conditions and in girlhood laid the ground work of subsequent ailments, only met with by men who treated diseases of the nervous system, or else the man who used the knife for her relief. In many cases the simple removal of the adenoids that grew in the uterus of these cases had been sufficient to relieve. If only here and there a case was met it might not be worth while to greatly disturb the situation; but this condition played so large a part in the causation of certain ailments in young unmarried women that he knew the audience would agree that they had better turn more attention to this class of cases.

There was another condition that he desired to emphasize, the advantage that came from early and full incision and drainage of the lower portion of the pelvis, or cul-de-sac, in those cases of

pelvic peritonitis associated with septic infection of the uterus and from specific disease. Many a woman so treated could have remained in sufficient integrity to lead not only a useful life, a healthy life, but also be prepared to procreate her species. One shrank from entering the peritoneal cavity when there was inflammation of the pelvic organs and yet not so when there was inflammation of the appendix.

DR. J. CLIFTON EDGAR said he would confine his remarks to the obstetric papers. With regard to Dr. Cragin's paper, he agreed in the main with the statements made about the toxemias of pregnancy, and he was grateful to him for bringing out the value of the nitrogen ratios as diagnostic factors. The same value was not now given by some to this method of examination of the urine as was given two or three years ago. It had been belittled by some. He was glad that Dr. Cragin divided the cases into the pure nephritic and hepatic, because he believed we could draw a line to-day more sharply than ever before between these two classes of eclampsia. Two years ago the speaker reported a series of cases before the Medical Society of the County of New York and he then drew the same line between them; but the line drawn to-day could be even sharper than the one drawn then. At the Manhattan Maternity Hospital the internes often make the diagnosis, before urinary analysis, of the nephritic or hepatic variety. They rarely went wrong in their diagnoses made on the clinical picture. He said he could go even a step further than Dr. Cragin in the diagnosis of the toxemia of pregnancy.

While he took into account the clinical picture in conjunction with the urinary findings, still there was a small class of cases, in which the urinary findings often flew the red flag, giving out the danger signal before the clinical condition and picture was particularly well marked. He had a small number of such cases which he expected to report next autumn. One was a case of persistent vomiting of pregnancy at twelve weeks; the vomiting ceased but the faulty nitrogen division continued into the middle of gestation. This patient did not show the clinical picture of toxemia in the middle third of gestation. The urinary symptoms continued. The faulty nitrogen ratio persisted to the sixth or seventh month when the eclamptic convulsions occurred. The patient all but lost her life. Sometimes one saw a combination of the nephritic and hepatic types of eclampsia.

With regard to the repair of the cervix, he said he was in accord with the statements already made; suturing the cervix should be confined to those cases in which there is hemorrhage.

It seemed to him that the keynote of both the obstetric papers was prophylactic obstetrics. It was Utopian to believe that we had arrived at a condition of affairs where dystocia would be prevented weeks before labor set in. We had obtained an admirable condition of affairs in institution work. But,

on the other hand, in private practice it was well known that we had not arrived at such admirable results. It was well known that in institution work the mortality from puerperal sepsis was one-tenth of 1 per cent. or less. The morbidity was exceedingly low. It was well known that in private practice the mortality was large from puerperal sepsis. The reason for this diminution in the mortality and morbidity rate in institutions was due to the introduction of asepsis and antisepsis in midwifery. The inference was plain.

Take ophthalmia neonatorum, in institution work the morbidity and loss of sight was practically *nil*. In private practice this was not so. In England, in 1884, 34 per cent. of the cases of total blindness was due to ophthalmia neonatorum. Twelve years later, 1906, in New York State, 26 per cent. of the cases of blindness were found to be due to ophthalmia neonatorum.

Examinations in pregnancy, especially in the primagravida, were of value in determining contracted pelves or large children. That was carried on in institutions, but not in private practice. We saw many instances of that kind. Only this morning a physician brought a patient to the office who had been delivered eighteen months ago; this patient had a male, funnel-shaped pelvis; it did not seem possible to overlook such a condition if the examination had been made before labor. No examination had been made in this case. The child was delivered with a broken neck and other injuries.

In speaking of the advances in midwifery he said he would merely refer to a box on the table before the section which was the property of Dr. Bedford who died in his sixty-fourth year in 1870 or thereabouts. He would simply state that the top tray contained eleven instruments; of these eleven, ten were designed to mutilate the child, or break it up, and only one was for the delivery of a living child.

DR. CHARLES JEWETT said that in the toxemia of pregnancy, whether of the vomiting or eclamptic type, the general condition of the patient must still remain the principal guide in the treatment. The nitrogen partition, however, was of great value and especially in cases in which the indication for interference is not entirely clear from the clinical standpoint. As Ewing and Wolf have said any material departure from the normal nitrogen ratios speaks for an unstable condition of the organism that may end in disaster. Eclampsia sometimes occurs explosively with scant clinical premonition. The end may come unexpectedly in pernicious vomiting.

Could an elaborate analysis of the urine be had at short intervals in all cases of pregnancy vomiting and in all pregnancies in the later weeks or months, many lives might be saved. But this requires the services of a practical chemist, is expensive and not generally available.

Dr. Jewett said he would like to have heard more said regarding the nitrogen coefficient as a clinical guide, and especially because

of the objections that have been made against it, namely, that an increase in the proportion of ammonia nitrogen may be due to starvation rather than pregnancy toxemia. It is known that experimental liver necrosis in animals so long as the animals can be fed is attended with very little increase of the ammonia excretion, while in hyperemesis of pregnancy in the human subject even with comparatively little pathologic change in the liver the percentage of ammonia nitrogen often is in great excess.

With reference to measurements of the fetal head and the pelvic diameters, the methods of Stone and Mueller I have found of great value in determining the necessity for premature labor and the choice of procedure at term.

Pubic section, whether median or extramedian, has a limited field which has grown more so with the improvement in the status of Cesarean section. The anatomic field is very narrow. It is difficult to select cases before labor which we can be sure will properly fall within the scope of symphysiotomy or hebotomy. During labor they have a place in obstetric surgery for certain cases in which the condition of the patient is such as to forbid Cesarean section. Successful examples of this kind he had already reported. Other disadvantages of pelvis splitting operations are the fact that frequently a preliminary artificial dilation of the cervix is required and that in practically all cases the child must be extracted by forceps or version. Thus one, and in many instances two, operations, each carrying its own dangers, must be added to the pubic section. The Cesarean operation, on the other hand, is suited to any degree of contraction, it alone effects delivery and without traumatism to the cervix. The most serious feature of pubic section, however, is the prolonged and difficult after-care of the patient.

As between median and extramedian section, there is little to choose. It is claimed that the mortality of pubiotomy is slightly less than that of symphysiotomy. Yet in many instances, after hebotomy, as the published cases show, the women had been more or less crippled owing to thrombotic and septic complications developed in the crural veins.

With regard to immediate suture of the cervix, he agrees with Dr. Cragin. His principal objection to it is the danger of sepsis. At the close of labor the obstetric wounds are fresh and absorption active. The general and local resistance of the patient are at a minimum. The cervix is perhaps the seat of less resistance than other parts of the birth canal because of the traumatism it suffers even in spontaneous delivery. These theoretical considerations have been borne out in his experience. In one case, a crural phlebitis had followed the operation and a similar accident had befallen one of his associates, with all the care they could use in matter of cleanliness. He believes the cervix should not be sutured at the end of labor except when necessary for hemostasis.

DR. GEORGE L. BRODHEAD said the division Dr. Cragin made of the toxemia of pregnancy into the nephritic and the hepatic types seemed to be a very convenient one. While the types might be combined, most cases could be classed as renal or hepatic.

The urine should be carefully examined in every case of pregnancy, not only for albumen, casts, acetone, diacetic acid, indican, etc., and in those cases where suspicious signs appear of toxemia, the nitrogen partition should be made as well. The time had not yet come when we could state that because the nitrogen partition did not show a proper amount of ammonia, urea, and undetermined nitrogen, or because acetone or diacetic acid was present, that the uterus should be emptied. We see cases from time to time, in which in spite of the fact that the urinary findings indicate the termination of pregnancy, the clinical picture does not warrant it. In other words the clinical picture must be taken into account as well as the urinary findings. Dr. Cragin had called attention to the fact that the late form of vomiting in pregnancy was frequently of toxic origin. This is unquestionably true.

We consider the pelvic measurements of the greatest importance. Yet now and then one met with a pelvis that was perfectly normal in its external measurements but which was nevertheless contracted. He recalled the case of a patient who had normal external measurements, but who gave the following history: The first child weighing nine pounds was born with the aid of low forceps, the child doing well. The second labor was terminated by craniotomy at full term the child being larger than the first had been. The third and fourth labors had been induced during the last month of pregnancy with excellent results. In spite of the best care, a slight flattening of the pelvis might easily be overlooked.

Dr. Cragin had called attention to forceps rotation of occiput posterior cases. Many obstetricians rotated the occiput forward as a routine practice, and had done so for years.

He believed a great advance had been made in the more frequent use of craniotomy, both in vertex and breech cases when the child was dead, rather than subject the patients to a difficult high forceps or podalic version.

He agreed with what Dr. Cragin had said about suturing the lacerated cervix; this should be done immediately after delivery only in cases of cervical hemorrhage.

Dr. Reynolds had brought up many interesting points. What he said regarding the low mortality of Cesarean sections was true, and for that reason it seemed to Dr. Brodhead that we might be tempted to do Cesarean section too often. Many patients could be delivered at the eighth month safely, and the child would do well. When Cesarean section had been done, there was always the danger, in subsequent labors, of rupture of the uterus at the site of the scar. Many of these ruptures had been

reported. Therefore, the induction of premature labor offered an advantage over Cesarean section.

Dr. Reynolds was right in stating that if a patient was going to have a normal labor special care was not necessary; but who could tell whether labor was to be normal or not? The patient might give promise of a normal labor and easy delivery; yet how often had emergencies demanded the greatest skill and experience.

He believed that to obtain the best results the greatest care was necessary, and that great stress should be laid upon the importance of strict asepsis, and in fact all the details of obstetric technic.

DR. F. A. DORMAN said he wished to emphasize the importance of the clinical evidences of toxemia, those that were often overlooked especially by the general practitioner. The early symptoms of poisoning were too often disregarded. Malaise the woman complained of was accepted as a matter of course; this was not sufficiently investigated. Treatment applied here would often avert the coming catastrophe. There were clear clinical symptoms. Every man should watch his case carefully and investigate the excretory and digestive functions, the circulatory system, the nervous manifestations, neuralgic or mental.

The operation of instrumental rotation of the head was a valuable method and technic in occiput posterior positions; this was increasing in usefulness.

In prophylaxis, the use of the rubber gloves should be emphasized.

There was still a large field for the induction of premature labor. During the last month of pregnancy one could get very successful results by starting labor and getting a smaller child.

He asked Dr. Cragin in what class of cases he thought the vaginal Cesarean section was indicated and what were his results? It seemed to him that in selected cases, with an apparently small child, with the cervix rigid, that this was a beneficial method of procedure.

He asked Dr. Reynolds wherein he considered the danger of Cesarean section increased by the test of the first stage, if the patient was in careful hands.

DR. W. GILL WYLIE was disappointed that more was not said in the way of prevention. If they saw these patients from the beginning of pregnancy much might be done by keeping them under observation. In his practice of over twenty-five years he made a close study of all these cases from the beginning, and it was amazing how often cases of toxemia and septic troubles in obstetrics might be averted. His experience, however, had been very small except in emergency cases and in consultation; but he was confident that much could be done by studying the cases and, if necessary, inducing labor a little early. It was amazing how seldom he now used the forceps

compared to a few years ago. The prevention of disease would show the greatest advance in the future.

DR. JAMES EWING, in speaking of the nitrogen partition in the toxemia of pregnancy, said that it seemed that the point of view in this work had been misunderstood. This method was presented as one which might give information of value, but it was not intended to supercede other and older methods. It was not intended to tell when to empty the uterus; it only told one when metabolism was not right. Disturbed metabolism should be an object of treatment. The nitrogen partition, therefore, should not be taken to indicate the time any more than the method of emptying the uterus, but rather it should be used as a basis of treatment to prevent the necessity of emptying the uterus. This work had been criticised by some writers, but Dr. Ewing said the criticisms were more fully stated in his own article than in that of the critics. Hemorrhagic hepatitis occurred in all cases of eclampsia which arose out of a clear sky, but not in other cases.

With regard to Dr. Reynold's remark about the difficult cases of labor or of obstetrics falling only into the hands of the specialists, Dr. Ewing said that as a result of his autopsy experience he was convinced that there was need of a better separation of these cases, and that the difficult cases should be turned over to the expert.

DR. E. B. CRAGIN, in answer to Dr Dorman's question, said that personally he believed the elective vaginal Cesarean section had but a small field. There were certain cases in which one believed he could dilate the cervix sufficiently to deliver the child, but the cervix would be found too hard and unyielding, and in such cases the vaginal Cesarean section would prove of great value. However, the field for this operation, in his judgment, was a small one.

DR. HERMANN J. BOLDT said that the adenomatous type of chorioepithelioma might sometimes be as dangerous to life as the carcinomatous type. The important question is shall they wait until evidence has occurred, or should we annihilate the disease, if possible, at once? It was, in his opinion, in the interest of the patient, to do radical work on the basis that we were dealing with a malignant form of disease. He had seen specimens in which there seemed to be no justification for operation; they were of the chorioepithelioma type but not of malignant form.

He said he could corroborate what Dr. Polk had stated in regard to the importance of vaginal section in certain cases, especially the early peritonitis form.

DR. EDWARD REYNOLDS, of Boston, closed the discussion. He said he did not think that at present it was generally realized how much the mortality of the Cesarean was raised in proportion to the length of labor. This was a matter he had watched for fifteen years and in the literature of the world he had never seen

an exception to the rule that when any considerable list of cases was analyzed its main mortality was found among the late cases. In answer to the question asked as to why the mortality should increase, he did not think that we are at present able to give an answer which would be authoritative or satisfactory in a scientific sense; perhaps the best hint at an answer was to propound another question. If a hundred strong young fellows started on a twenty-five mile Marathon run and a certain proportion of them were pulled out at the end of each mile, and subjected to a simple abdominal operation, such as an appendectomy, would not any surgeon expect that the mortality would be less among those operated on in the full flush of condition at the start than among those who submitted to it as they came struggling in at the finish? Would it not be, in general, roughly proportional to the amount of exhaustion which had preceded the operation?

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

(Concluded from page 280.)

SUPPURATIVE PHLEGMONOUS GASTRITIS.

DR. J. WESLEY BOVEE, of Washington, after going extensively into the literature of this subject, reported a case of circumscribed suppurative phlegmonous gastritis in which he resorted to gastrostomy. The case was complicated by pregnancy of six months and abortion. Mrs. T., white, thirty-six years of age, who had had seven children, followed in 1895 by a miscarriage, was admitted to Columbia Hospital October 6, 1907. She had suffered from pain in the epigastric region for several years, which was usually relieved by taking food. Her last menstrual period occurred April 13, 1907, and she considered herself pregnant. Oct. 3 she ate heartily of boiled cabbage for dinner, and crabs late at night. In the night she was attacked by severe pain in the region of the stomach. Morphia was given for pain. The following day the pain continued and vomiting set in. An attempt to move the bowels by enemata and cathartics was unavailing. The temperature was elevated, ranging from 99.5° to 101.5° F. Pulse was rapid and weak. The next day croton oil was employed by mouth, but the bowels failed to respond. The various remedies were not effective in relieving the pain, constipation and vomiting. The vomited material was first solid and partially digested food. Later it was watery and frothy, changing to dark green. She was so enfeebled and

appeared to be so ill that the attending physician secured an ambulance and took her to the hospital Sunday night, as mentioned. No chill or sweat was experienced. Dr. Bovee saw her about 11 o'clock that night. At that time her pulse was thready and her countenance anxious in appearance. Examination under anesthesia disclosed the uterus extended to an inch above the umbilicus, and the epigastrium was distended, very tender and tympanitic. She was promptly anesthetized and in the presence of Dr. Neff and Dr. Dorsey, a median line incision above the uterus was made. The intestinal loops were congested, but nonadherent. The stomach was palpated. It was found to be fully three-fourths of an inch thick at the middle of the greater curvature, gradually thinning toward the cardiac end. In the pyloric end and in front was a mass nearly the size of a man's fist, that was soft, though not doughy to the touch. This gradually thinned out toward the middle of the stomach. The stomach was opened at about its middle by a longitudinal incision at about three inches, and the mucosa inspected. To determine the nature of the enlargement more definitely a separate short incision was made over it, when the nature of its contents was manifest. Gauze was passed around it, and it was opened, and two or three ounces of grayish pus escaped. The long incision was closed and the pus cavity wiped out. A rubber tube was tightly sutured into it, and brought out of the abdomen. A light gauze drain was packed about it. She was fed per rectum for twenty-one days. Five days after operation liquids were given by mouth as salt solution by hypodermoclysis and liquids by rectum did not quench her ravenous thirst. The following day the contents of the stomach came through the wound. A few days later solid food was given and the tube removed. Stomach contents ceased escaping in a few days. On the eighth day with little effort she aborted, the fetus living three hours. With the exception of infection of the abdominal incision, which required resuturing, she had made an uninterrupted recovery.

THE DIAGNOSIS OF EXTRAUTERINE PREGNANCY.

DR. HERMAN J. BOLDT, of New York, under the term extrauterine pregnancy included all fecundations which were situated outside the uterine cavity. Uninterrupted extrauterine pregnancy was but rarely recognized, and then usually by mere accident, when operating for other conditions, or when examining a patient for a complaint causing symptoms independent of extrauterine gestation. He had never palpated a tubal pregnancy prior to the occurrence of symptoms due to the pathological implantation of the ovum, except in one instance of double tubal gestation. In this case, however, the right tubal gestation gave rise to symptoms and was diagnosed. On the opposite side a tubal enlargement was felt, the nature of which

was not diagnosed, but on operation the tubal distention proved to be due to a tubal pregnancy, which had not begun to be interrupted by bleeding within the tube, or by any inflammatory process about the tube.

The symptoms of tubal abortion and of partial rupture were identical, especially if the defect in the tube wall was small. Usually atypical bleeding was present, but in most instances the blood lost was peculiar, almost characteristic, and of a nature very seldom found in other pathological conditions. It was dark, tarry, and of a smeary consistency. He had known such bleeding to continue steadily or at intervals for weeks, especially in cases in which a hematocele had formed. A very frequent symptom observed among his patients was an intense lancinating pain in the lower part of the rectum.

Judging from his own experience, the greatest difficulty in making a correct diagnosis was in differentiating an ectopic gestation in its early stages from purulent inflammatory conditions of the adnexa, because with the latter a patient sometimes gave a history identical with that of ectopic gestation, and objectively the tube was distended and firm in consistency. Also, the change in the uterus and in the vaginal mucus membrane might be similar. There might be delayed or omitted menstruation, or atypical bleeding, and he had seen cases where the blood was similar to that described above as typical for the bleeding of interrupted extrauterine pregnancy. Furthermore, the character of the pain was sometimes identical, except that collapse never followed, as was usually the case in profuse hemorrhage. Occasionally in such cases he was unable to make the differential diagnosis without a surgical intervention. Such occasional resemblance was comparatively seldom met with. The instances that he had seen were invariably cases of acute pyosalpinx, or chronic cases with an acute exacerbation. Two symptoms to which he had learned to attach importance were also absent, namely, pain in the lower part of the rectum, and pain on moving the vaginal portion of the cervix forward with the examining finger. It was difficult to explain why these symptoms should be absent, because there was present a perimetritic inflammation in that locality.

An error most frequently made by physicians was that of mistaking ectopic gestation for early abortion. He had cared for more women with extrauterine pregnancy who had been culled by their attendant under the impression that they had had an incomplete abortion than for any other erroneous diagnosis. In taking the history it would be found that with abortion cases the pains usually began with a moderate aching or drawing pain in the lumbar region, radiating toward the hypogastrium. In tubal pregnancy the pains were much more intense and were unilateral in the beginning, and the periods of intermission were generally further apart. He had always relied upon the more pronounced changes that took place in intrauterine pregnancy,

so far as the uterus and the vaginal mucous membrane were concerned. In some instances it was undoubtedly good practice to wait and keep the patient under careful observation.

Appendicitis might sometimes be mistaken for extrauterine pregnancy, or the opposite error might occur. In an inflammation about the appendix, however, the exudate, if there was one, would be higher up in the pelvis, more toward the iliac fossa. Again, there was always a febrile condition in appendicitis, and none of the symptoms of pregnancy was found unless pregnancy and appendicitis were coexistent. If one was careful in eliciting a patient's history, there would always be found a difference.

A perforative peritonitis might resemble a ruptured tubal gestation with profuse internal hemorrhage; both conditions being associated with an attack of intense abdominal pain, followed by collapse. In appendicitis with perforation there was absence of the symptoms of profuse internal hemorrhage; instead of the anemia which existed in extensive rupture of tubal gestation, the peculiar facial expression of peritonitis was seen, and continuous pain was a more prominent symptom. While the author had endeavored to outline briefly the conditions which were likely to aid in establishing the diagnosis of ectopic pregnancy, he freely admitted that even the most expert diagnostician was not infallible.

WHY CHOLECYSTECTOMY SHOULD NOT BE PERFORMED AS FREQUENTLY AS AT PRESENT ADVOCATED BY MANY SURGEONS.

DR. JOHN B. DEAVER, of Philadelphia, said that in hydrops of the gall-bladder cholecystectomy was practically always required, since obliteration of the cystic duct rendered the gall-bladder not only useless, but a continued menace from the liability of reinfection and even rupture. The only exception he would make to this rule was in obstruction of the cystic duct by stone, if of recent standing. If the gall-bladder showed but little macroscopical evidence of disease, and upon dislodgment of the stone bile flowed immediately into the gall-bladder, it might be wise to leave the gall-bladder. Cholecystectomy should be done in cancer or other newgrowths of the gall-bladder where they were limited to the gall-bladder; and in calcareous degeneration or in fibrosis of the gall-bladder. Traumatism of the abdominal wall with rupture of the gall-bladder had occurred twice in his experience; in neither case was it necessary to do more than drain. Chronic empyema called for cholecystectomy, while in acute empyema drainage might suffice. Gangrene of the gall-bladder naturally required its excision. The same was true of perforation, since this last condition occurred most frequently when the gall-bladder walls were extensively diseased. In the presence of gangrene of the gall-bladder, where there were severe constitutional symptoms, it might be

wise to leave the gall-bladder temporarily. This had been done and removal accomplished at a subsequent period, with good results. He had seen many an acute empyema recover following drainage only. When the fundus of the gall-bladder only was diseased, it should be resected, and the remaining part of the gall-bladder drained. Ablation of a gall-bladder the seat of stones, but otherwise healthy, was indicated when many small stones, all of which could not be removed, were embedded in the mucous membrane. The gall-bladder should not be removed, unless the cystic duct was permanently and irremediably occluded, and its walls seriously diseased. With few exceptions, when the duct was patulous, the gall-bladder should not be removed in acute catarrhal calculous or noncalculous cystitis; nor even always in acute suppurative calculous or noncalculous cholecystitis. But in comparatively few cases of chronic calculous or noncalculous cholecystitis was ablation indicated, unless hydrops, fibrosis, or calcification of the walls of the organ existed. He did not believe that the removal of the gall-bladder prevented absolutely the recurrence of stone, for it was known that stones, though rarely, were found in the smaller hepatic ducts and in the common duct.

In gall-bladder work hard and fast rules could not always be followed. Whether the gall-bladder should be taken out or not must sometimes be decided, not alone by the condition of the organ itself, but also by the condition of the patient. While cholecystectomy might be proper when the gall-bladder was alone involved, it might not be proper in the presence of associated diseases of the bile duct.

The question of cholecystectomy, pro and con, appealed to him strongly. From what he had read and heard, he feared that the removal of the gall-bladder was all too common, and he felt that the influence of the prevalent teaching in favor of cholecystectomy upon those who had not had a sufficiently large experience to decide for themselves for or against removal, would be bad indeed. Personally, he could honestly say that the more gall-bladder surgery he did, the less inclined he was to remove the gall-bladder.

IS CATGUT PREFERABLE TO SILK IN ABDOMINAL SURGERY?

DR. JOSEPH TABER JOHNSON, of Washington, D. C., thought that this inquiry could not be safely answered in the affirmative, neither was it wise to answer it with a positive negative. The best results could be secured by a judicious combination of the two ligature and suture materials. He considered the question timely, on account of the not infrequent declarations which were made by the enthusiastic associates of catgut that it was the only ligature material which they had ever used or recommended in their abdominal work. Dr. Johnson thought a middle ground was much more scientific and safe in all operations pertaining

to the abdomen. The two great objections to absolute and universal dependence upon catgut had been the difficulties in the way of perfect sterilization and the preservation of its tensile strength. Could surgeons be always sure that catgut was sterile in the operating rooms, and of that supplied to them for emergency operations in private houses? He thought not. The argument in favor of the absorbable suture and ligature in abdominal surgery was very attractive, but that it was to be relied upon to the exclusion of fine sterile silk or linen thread in all abdominal operations the writer thought was unwise and unsafe in the long run. That catgut should be generally substituted for silk in abdominal operations was a proposition not authorized by the text-books dealing with this subject as their examination would demonstrate. The practice of very many distinguished and successful surgeons was opposed to the universal substitution of catgut for silk or linen thread. The writer had witnessed and performed too many thousands of successful abdominal operations where silk sutures and ligatures had been used to assent to the statement that the substitution of catgut for silk was necessary to success. Fatal cases had been reported at society meetings, from the effects of infection and secondary hemorrhage, where catgut was used. While it is admitted that these accidents were less frequent than they formerly were, owing to improved methods of sterilization, it must also be admitted that finer and smaller silk ligatures and sutures were now in use, and that the inclusion of large masses of tissue in pedicle ligatures had been largely abandoned for the separate constriction of individual vessels.

Upon inquiry, it would be found that many good abdominal surgeons were very properly combining the two methods in their work, using catgut for the peritoneal suturing, the covering of raw surfaces, the ligation of the individual small vessels, and in uniting some of the tissues of the abdominal wall, while in the same operation they depended upon silk or linen thread to hold together sutured surfaces of the stomach, intestines, and other abdominal viscera, and to ligate large vessels. Many surgeons used silk in their appendectomies.

In the ligation of vessels the absorbable catgut is being depended on more generally than formerly, as it was now generally known that hemostasis did not require to be maintained for so long a time to insure safety from secondary hemorrhage as was formerly taught. At the last meeting of the American Medical Association, while one paper was being read in one section on the safety of the universal substitution of catgut for silk in abdominal surgery, there were two papers read in other sections in which deaths were reported from hemorrhage where catgut ligatures had been employed. Closures of the abdominal wall by a number of continuous catgut buried sutures had proved an unsafe practice to the knowledge of the writer in a number of cases. The absorbing stitches gave way within the first

week after the operation, with resulting protrusion of the intestines. If catgut was used, the interrupted sutures would be safer, as some of them would probably hold the wound together, if others gave way, while if any portion of the continuous suture broke, the entire line of union would be unsupported. A number of through-and-through silkworm gut sutures would save the day in those cases. While it was admitted that an occasional deep sinus had proved troublesome, from an infected silk suture, and that the knots of silk ligatures had caused a few small abscesses or ulcerations, no death had been reported, so far as the writer knew, attributable to silk. One would naturally prefer a few troubles of this kind to an occasional funeral from the too universal reliance upon too early absorbed or unsterile catgut.

Dr. Johnson quoted Dr. Charles A. L. Reed and Dr. John A. Wyeth as surgeons who favored linen or silk in preference to catgut.

Dr. I. S. STONE, of Washington, D. C., presented a paper on

RETRO-PERITONEAL CYSTIC ADENOMATA.

The author called attention to the varieties of cystic tumors found in different locations within the abdomen and without the peritoneal cavity or behind the peritoneum. It will be observed that nearly all retroperitoneal tumors situated above the pelvic brim or having their origin above this point will prove to be solid or else degenerations of solid tumors. An exception may be made of dermoid tumors as these are often found without rhyme or reason in any part of the body. But the cystic tumors found within the peritoneum are, as a rule, easily accounted for and spring from the ovary or parovarium in by far the greater number of cases. But we occasionally find tumors which are not within, but are without the peritoneal cavity, and yet are not within the folds of the broad ligament and are not ovarian or parovarian. Such tumors have usually been considered degenerations of misplaced ovaries, or else of such obscure origin as to be impossible of classification. We may regard them as derelicts, yet must assign them in the category of rare but nevertheless definite class of neoplasms which may have their origin in remnants or débris of embryonic tissue. It will be found by microscopic examination that nearly all tumors are true to their type and have not made any special changes as from benign to malignant degeneration, or from one of the forms of myomata to sarcomata, and we find here the presence of the cylindrical epithelium shows their origin in the remains of the Wolffian body. Hartz and others have reported cases which go to confirm the views of Recklinghausen relative to this origin of retro-peritoneal cystic adenomata. These tumors have had their birth within the wall of the uterus and become displaced during their growth until they are no longer

within or connected with the uterus, and appear entirely independent of any organ. It is, however, pretty definitely settled that their development has proceeded from some one of the embryonic elements usually found in the uterus itself. Certain authors have believed they have traced the development of these growths or those of similar location and appearance, to Gartner's ducts, but a majority of observers are of the opinion that they originate in the Wolffian body. The author reported two cases which had occurred in his experience within the past year.

OFFICERS.

The following officers were elected for the ensuing year: President, Dr. F. W. Parham, of New Orleans, La.; First Vice-President, Dr. Willis F. Westmoreland, of Atlanta, Ga.; Second Vice-President, Dr. Henry D. Fry, of Washington, D. C.; Treasurer, Dr. Stuart McGuire, of Richmond, Va.; Secretary, Dr. W. D. Haggard, of Nashville, Tenn.

St. Louis, Mo., was selected as the place for holding the next annual meeting in 1908, and Dr. John Young Brown was chosen as Chairman of the Committee of Arrangements.

REVIEWS.

THE OPERATING ROOM AND THE PATIENT. By RUSSEL S. FOWLER. M. D., Professor of Surgery, Brooklyn Post-Graduate Medical School, Chief Surgeon, First Division German Hospital, Surgeon, Methodist Episcopal Hospital, Brooklyn, New York. Second Edition. Revised and Enlarged. W. B. Saunders Company, Philadelphia, and London. Price, \$2.00 net.

This book should prove of considerable value to such as have supervision of operating rooms. The headings of the twelve chapters will afford a fair idea of the scope of this volume. The Operating Room and Personnel; The Instrument and Supply Room; Anesthesia; The Patient; General Considerations in the After-treatment; Course of Aseptic Wounds; Infection; Complications of Wound Infection; Aseptic Wounds in Infected Tissues; Wound Disturbances the Result of Pressure; Wounds of Special Tissues and Lists of Instruments and Dressings Commonly Employed. It will be seen that the author has covered the ground rather fully, yet it appears to us that the author has seen fit to discuss in extenso only such procedures, and methods of preparation as are in usage in the hospitals with which he is connected. To our view, therefore, the book suffers from an excess of individuality. The illustrations and general "make up" of the book are creditable.

E. M.

A VERY YOUNG OVUM IN SITU. By PROF. G. LEOPOLD, Geh.

Med., Director of the Royal Gynecological Clinic and School for Midwifery. Comprising the Fourth Volume of the *Arbeiten aus der Frauen Klinik in Dresden*, with sixteen lithographic plates. Authorized English Translation by M. H. VOGT, M. D., Gynecologist and Obstetrician to the Lutheran Hospital, St. Louis, Mo. C. V. Mosby, St. Louis, 1907. Price \$3.50.

The ovum, of which this book is a minute description, is probably the youngest human embryo on record, being even smaller by 0.2 mm. than that of Peters, upon whose descriptions our present knowledge of the early implantation of the human embryo is largely based. Leopold, in the main, confirms the observations of Peters.

The volume is divided into six sections. The first is a tabular reconstruction of the ovum according to the 160 microscopic sections. Then follow five chapters bearing these headings: 1. The Mucosa Elevation which Harbors the Ovum and the Decidua Vera. 2. The Embedding of the Ovum. The Capsularis. The Fibrinous Cover. 3. The "Eianlagn" and the Ovular Chamber. 4. The Trophoblast and its Surrounding Blood Spaces. The Intervillous Circulation. 5. The Syncytium. The sixteen plates are excellent and the explanatory notes are full. The book would be of more value were an index provided. E. M.

BLOOD STAINS. Their detection, and the determination of their source. A manual for the medical and legal professions. By MAJOR W. D. SUTHERLAND, of His Majesty's Indian Medical Service, Doctor of Medicine. Wm. Wood and Company, New York, 1907.

The often quoted but less frequently deserved eulogium, "This book fills a definite want" applies very justly to this volume. The literature upon this subject is vast; it is scattered through many books and journals of many tongues, forming a mass of investigation of which a large part is of small or of no value, either because of repetitions, poor observation or the nonconfirmation of results. In this book the author affords us an entire summary of our present knowledge of this difficult subject. He has, moreover, not done this merely as a compiler but also as the experienced and keen critic of the value of the many methods that have been suggested. The book should prove of great value both to the medical and legal professions. E. M.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY. Volume 32, pp. 568. Philadelphia. Wm. J. Dornan. Printer, 1907.

This handsome volume contains the text of the matter brought before the Society at its thirty-second annual meeting held in Washington, D. C., in May, 1907, much of which has already appeared in abstract in this journal. The volume also contains the papers of the candidates elected to fellowship at the meeting and an In Memoriam sketch of Fernand Henrotin.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Hemorrhage from Varicose Veins of the Vagina in Pregnancy.

—Grunebaum (*Munch Med. Woch.*, Dec. 24, 1907) states that varicose veins of the vagina are quite frequent in pregnancy. The veins become increased in length as well as in width and become tortuous. They are found in from 25 to 75 per cent. of all pregnant women according to different authors. The cause of the varicosities is primarily the pressure of the gravid uterus on the hypogastric and iliac veins. Over-filling of the large intestine through constipation is also an important factor in producing this trouble. The upright position in standing and working is a third factor. We must add an individual predisposition by weak-walled veins. These varices produce serious and even fatal bleeding at the time of labor. The author describes three cases of hemorrhage in labor observed by himself. The indication is to empty the uterus as soon as possible when hemorrhage occurs, since it cannot be controlled. When the physician has found such varices in the vagina the patient should be made acquainted with the danger of bleeding, and should be instructed how to make pressure on the varix with wadding should hemorrhage occur when a physician cannot be reached easily.

Small-pox and Pregnancy.—Queirel (*Rev. Fran. de Méd. et de Chir.*, Jan. 10, 1908) gives the mortality of pregnant women having small-pox as 36 per cent., and that of the children as 50 per cent. But the mortality varies considerably according to the form of the disease. In hemorrhagic cases every patient dies and all infants are dead. In the discrete form the infant is not necessarily killed and the mother generally survives. The confluent form is more serious than the discrete. An abortion does not seem to increase the fatality of the disease. At the same time all that die have undergone abortion or premature labor. The author questions why the fetus dies, and why premature expulsion occurs in so large a proportion of cases. Usually no lesion of the placenta or the membranes is found. There must be admitted lesions of the placental connections that cause the abortion in the hemorrhagic form of the disease. Outside of these hemorrhagic cases the cause of the abortion is the transmission of the disease to the fetus. Cases have occurred in which the infant was found marked with the scars of the disease. Others are recorded in which the scarred infant was the offspring of a mother who had been vaccinated and who did not have small-

pox, but who had cared for a small-pox patient. Microbes must pass from the mother to the fetus in small numbers, but sufficient to infect the fetus. The infection is transmitted in different doses and at variable times of the disease. A fetus may be feebly inoculated and may obtain thus an immunity against the disease. By this transmission and by the septicemic manifestations the abortion is to be explained. The method of prophylaxis is by repeated vaccinations to obtain a discrete form of the disease in a pregnant woman.

Treatment of Fibroids Complicated by Pregnancy.—P. Hardouin (*Arch. Gén. de Chir.*, December 25, 1907), after describing a case of obstruction of the pelvic cavity by a fibroid in the anterior wall of the uterus, which necessitated an operation for enucleation, followed by recovery and the birth of a child at term, goes on to state that it is not always necessary to operate on patients who have fibroids when pregnancy occurs. In many cases the fibroid is so placed that the pregnancy can continue without interruption and no obstruction to labor will occur. Torsion of the pedicle of the tumor or an intraperitoneal polypus will necessitate immediate operation. Suppuration of the fibroid and compression of other pelvic organs are the other dangerous symptoms. Abortion for uterine fibroids is no longer considered justifiable, since the mortality has been excessive. Myomec-tomy is relatively without danger. Hemostasis is difficult but it can be accomplished. The possibility of producing abortion is not great since the uterus is tolerant to a great degree. The enucleation of the growth produces a dissociation, not a section of the uterine fibers and the opening is easily closed so as not to weaken the uterine wall. Myomec-tomy may be considered the operation of choice, being without danger for mother or child. Hysterectomy may be necessitated, abdominal or vaginal. If it becomes impossible to enucleate the tumor hysterectomy must follow a laparotomy. Another important question is whether we should discourage marriage in virgins who have fibroids. The author believes that we should encourage them to have the tumor removed before marriage. During labor spontaneous birth may be awaited if there is no dangerous symptom and the fibroma is high up. If it partly closes the pelvis an attempt may be made to crowd the growth upward above the symphysis. If this is impossible a Cesarean section must be done, generally followed by a supravaginal hysterectomy.

Delivery in Contracted Pelves and its Management.—R. Olshausen (*Berl. Klin. Woch.*, Jan. 6, 1908) states that it is not always easy to make a diagnosis of the kind of pelvic contraction we have to deal with, yet on the sort of pelvis that we have before us must depend the management of labor. The diameters of the pelvis do not always give an index of the difficulty or ease of delivery, nor is it always easy to obtain correct measurements. Whether the pelvis is a simple rachitic or a symmetrically contracted one, only the conjugata vera being contracted

or all the diameters, is of the greatest importance. A flat pelvis is more unfavorable than a rachitic pelvis. Other factors of importance and ones that we cannot measure are the size, shape, and hardness of the fetal head. These we cannot judge of at all until the membranes have been ruptured and the contractions have pushed the head down into the pelvic brim. Again we must reckon with the force of the contractions which is very variable. We have few measures for increasing the strength of contraction. Ergot cannot be used until late in delivery. Quinine has some power, when given in large and repeated doses, of increasing them; but it has bad effects on the child. As to treatment of the deformity, we have first to consider the use of forceps. We should never make a long and severe effort to deliver by this means, since the compression of the head if long continued will kill the child, and the soft parts of the mother will be endangered by the pressure, and this damage may result in gangrene and sloughing. Version in the sense of a prophylactic measure is not favored by the author, who believes that more living children are delivered under these circumstances by head than by pelvic presentations. When there is no thought to be taken for a child that is already dead it is of value to preserve the life of the mother, since the child's head will then permit a long process of moulding. Perforation and cranioclasia are justifiable only after the death of the child. Cesarean section has a less mortality than other operations. Widening of the pelvis by symphysiotomy has passed out of use in Germany, but pubiotomy fills an important place in the therapeutics of contracted pelvis. It is to be said that we have not yet obtained the best technic which will put aside all danger to the mother, and that there are still serious dangers, such as sepsis from lesions of the vagina communicating with the wound and injuries of the bladder. At the same time this is a most useful operation.

Cesarean Section.—William Sinclair (*Jour. Obst. and Gyn., Brit. Emp.*, Nov., 1907) reports a case in which Cesarean section has been performed four times successfully. He believes it is unjustifiable to sterilize the patient but rather all Cesarean sections should be performed with a view to ulterior pregnancy. The writer believes the best method of operation is that which secures close extension and symmetrical adhesions between the front of the uterus and parietes, and excludes the formation of omental and intestinal adhesions.

Arrest of Hemorrhage After Labor.—After discussing the arrangement of the circulatory system and muscular layers of the uterus, J. H. E. Brock (*Practitioner*, Jan., 1908) says that for those who maintain that postpartum hemorrhage is arrested by the compression of arteries and veins alike, somewhere in the muscular coat, with formation of extensive thrombi, the extreme rarity of embolism, during the puerperium, must be a staggering fact, especially if they recollect that, for some time after labor, the uterus, by alternately contracting and relaxing, would seem

to be doing its best to encourage such an accident. The clinical features of a postpartum flooding leave no doubt in the writer's mind that the bleeding is venous. The blood from the huge maternal sinuses is carried to the inferior vena cava by large veins which are valveless. Unless the mouths of the sinuses are securely folded together, regurgitation must result. The treatment of mild cases of postpartum hemorrhage is thoroughly agreed upon. That of serious postpartum hemorrhage resolves itself into the treatment of regurgitant venous hemorrhage; the extreme gravity of which depends on the fact that the blood, which is pouring into the uterus, is regurgitating from the inferior vena cava through valveless veins. Its correct treatment, therefore, must be carried out by one of two methods: (1) either by applying direct pressure to the bleeding sinuses, by introducing one hand closed into the vagina, while, with the other, the fundus of the uterus is pressed down on to it through the abdominal wall; or (2) by elevating the pelvis and compressing, not the aorta, but the inferior vena cava, by precisely the same maneuver. It is the writer's opinion that the method for arresting postpartum hemorrhage by compression of the aorta, depends for its success, on compressing, not the aorta, but the inferior vena cava, and thus stopping the backwash of blood from the latter.

Medical Responsibility, Lamentable Consequences of a Retroplacental Hemorrhage.—Pinard (*Bull. Méd.*, Dec. 28, 1907) details a rare case of retroplacental hemorrhage, occurring in the practice of a midwife of thirty-five years' experience, during which she had honorably discharged her duties. In the present instance she found nothing abnormal except a small amount of hemorrhage after some hours of pains. She ruptured the membranes and the hemorrhage ceased. The patient expressing dissatisfaction with her treatment and the midwife having been up all night she decided to give up the case. After some hours a physician was called who did not arrive, and another came after some delay to find the patient dead. The autopsy showed that a retroplacental hemorrhage had caused the patient's death. This is a condition which rarely occurs, has no regular symptomatology, and is rarely diagnosed during life. Even when it has been diagnosed the various forms of treatment tried have been of no avail. The midwife was arrested and after a trial at which the author defended her she was condemned as guilty of murder. Pinard urges all physicians to join in a crusade against contradictory expert testimony when used against the medical profession and their allies, the midwives.

Radicular Brachial Paralysis of Obstetrical Origin; Probable Tearing of the Sensory Roots.—Louis Gallicadrin and Jean Rebattu (*Lyons Médical*, Dec. 22, 1907) states that radicular paralyzes of the brachial plexus are a somewhat rare complication of obstetrical procedures when they necessitate manual or instrumental delivery. They are more frequent in breech

presentations, although occurring sometimes in cephalic presentations. They are paralyzes of the upper extremity, the forearm and arm being paralyzed while the fingers are spared. They are generally entirely motor. The author has examined a case of this paralysis in which the troubles of motility were slight and those of sensation were marked. There were total anesthesia of the entire upper extremity, tactile, painful, and thermic, and abolition of the deep sensations, and oculo-pupillary symptoms were also absent. The patient had burned herself severely through not being able to feel any heat. The symptoms were confined to the portions supplied by the brachial plexus, third and fourth cervical, and second and third dorsal nerves. Motor symptoms were slight, no group of muscles being entirely atrophied, and no movements abolished. The lesion was probably a complete rupture of the posterior, sensory roots of the brachial plexus, with a simple stretching of the anterior roots. The rupture must have been intrarachidian. Hyperelevation of the arm will bring about this result, the anterior roots rupturing first. If the head was in flexion, the chin pressed upon the chest, or the head turned forcibly to the opposite side, the posterior roots would suffer most from the strain and would rupture first. Such was probably the lesion here.

Rupture of the Umbilical Cord During Labor.—O. H. Forssell (*Arch. f. Gyn.*, Bd. 84, H. 1) states that we may have a partial or a total rupture of the umbilical cord during labor. It may occur as a result of the rupture of varices in the cord with the production of a hematoma of the umbilicus. There may be rupture of some of the vessels of the cord with an outflow of blood into the amniotic cavity or a velamentous insertion of the cord may be ruptured. An entire rupture of all parts of the cord is less frequent. It occurs more frequently in precipitate labors than in any others. In 273 precipitate labors Klien found rupture in 133 cases. The weight of the fetus may produce multiple lesions of the vessels of the cord, and the ends of the ruptured cord may be clean-cut as with a knife. In operative births, especially where the cord is abnormally short, ruptures of the cord are also more frequent. The cord may be wound around some of the members of the fetus and thus the same effect result as if it were short. Some authors believe that syphilis is a predisposing cause of the lack of elasticity which belongs to these ruptured cords. In the author's case there was no symptom of syphilis in either mother or child at any time, and the child lived for some years after its birth. The author believes that the rupture comes as a result of a deficiency in the elasticity of the cord. There are elastic fibers in the walls of the blood-vessels in the normal cord. These seem to be reduced in number in the cords that rupture. The normal cord may be stretched to one-third more than its ordinary length by weights applied slowly.

Ophthalmoblenorrhoea of the New-born Contracted in the Uterus.—Ernst Helzbach (*Monatschrift f. Geb. u. Gyn.*, Jan.,

1908) tells us that not all cases of gonorrheal ophthalmia are contracted during or after birth. There are many authentic cases on record in which the discharge and other eye symptoms were present at the time of birth. He describes a case which was treated by him in which the infant was born with a purulent discharge from each eye and ulcerations of the cornea. Still-born children have also shown these changes. This lesion is generally accompanied by the discharge of a bad-smelling amniotic fluid, showing that this fluid was infected. The high temperature of the genital canal favors the development of the germs. When the membranes have ruptured in case of a long labor the germs may ascend into the fetal envelopes and infect the child. Prophylactic treatment of the eyes of the new-born becomes of added importance in the light of these possible conditions.

Uterine Endoscopy after Abortion and in the Normal and Pathological Puerperal State.—C. N. David (*Bull. de la Soc. d' Obst. de Paris*, Dec. 19, 1907) describes a hysteroscope designed for examination of the endometrium. It consists of an outside tube open at the internal end, an inner tube closed at the internal end with a glass plate, and an electric light which can be placed within the inner tube. The glass allows of seeing the lesions of the mucous membrane unobstructed by the presence of blood flowing from it. By withdrawing the inner tube it is possible to make applications to the lining without removing the instrument, or to remove a fragment of placenta. After a normal labor the instrument shows the smooth, rose-colored mucous membrane, with a placental site that is irregular, roughened, and punctuated with blackish coagulations. When the placental tissue is retained it appears lobulated, and of a blackish-red color. After digital curettage it is possible to see whether the tissues have been entirely removed. In puerperal infections small ulcerations may be seen and little plaques of sloughing material. In some cases a true gangrenous eschar may be seen. In severe puerperal sepsis the color of the lining is of a peculiar gray quite different from the normal rose color. After abortion it is possible to see what has been left behind, and in one case the author saw a perforation of the uterine wall made by some instrument used to cause the abortion. Uterine malformations may also be seen, a uterus didelphys being diagnosed in which one horn was infected and one normal. The examination is very easy, painless, has no inconveniences and dangers, and gives valuable information.

Operative Treatment of Irreducible Puerperal Inversion of the Uterus.—Emanuel Gross (*Zent. f. Gyn.*, Nov. 16, 1907) discusses the treatment of inversion of the uterus in the puerperal state. When recognized early it may be reduced manually, but when the condition has existed for weeks or months this treatment becomes ineffective. The organ may become bound by adhesions and operative interference is then needed to reduce the inflamed organ. The author describes a case reduced by himself after it had been in existence for six months. He recommends as the typical

operation the opening of the peritoneum by way of the vagina, bimanual reinversion, after cutting the uterine wall when necessary. When adhesions have occurred which cannot be loosened by the vaginal route, laparotomy should follow colpotomy; the adhesions may then be loosened, and manual reinversion accomplished after a partial section of the uterine wall. Sterilizing operations should not be performed when they can be avoided. There is a certain amount of danger of rupture of the uterus after these operations in case of another pregnancy.

Treatment of Puerperal Fever.—Wm. S. Sinclair (*Surg. Gyn. Obst.*, Nov., 1907) finds there is only one etiology of puerperal fever, the poisoning of a wound, and there is essentially only one method of treatment. The diagnosis having been made in the early stage—sapremia or septicemia, it matters not which—the uterus must be cleared out and the infected material must be removed. All wounds of the vagina and cervix must first be thoroughly swabbed with carbolic acid or corrosive sublimate. The uterus is cleaned out with a sharp curette as is also the cervix. We now flush with sublimate solution and so float out the coarse shreds, then the uterus is swabbed out until the swabs come away without any adhering particles of tissue. The cavity of the uterus is now gently packed with gauze wrung out in a solution of perchloride of mercury. The vagina is now packed and the patient put to bed. When there are symptoms of peritonitis the abdomen should be opened at once, the incision being only large enough to admit the largest caliber of Keith's drainage tube; the abdomen is now flushed out until the returning fluid comes away clear. The abdomen is then closed leaving the cavity full of saline solution. The uterus is now curetted, swabbed and packed. Douglas' space is now opened and a glass tube introduced; the vagina is packed with corrosive sublimate gauze. In twenty-four hours the vaginal packing is removed, the pelvis is flushed through the glass tube and the packing removed from the uterus. A third flushing through the vaginal tube at the end of twenty-four to forty-eight hours and the removal of the tube completes the local treatment.

Puerperal Psoitis.—P. E. Launois (*Jour. de Méd. de Paris*, Jan. 20, 1908) describes an unusual form of puerperal infection, puerperal psoitis, a case of which he reports. The psoas muscles are inclosed in an aponeurosis which separates them from the surrounding structures and confines the pus when it has formed. The muscular fibers are separated by bands of cellular tissue containing islands of fat. The symptoms of the affection are characteristic; pain, less of power, attitude of the limb, flexed on the pelvis but not adducted or abducted, swelling in the iliac fossa, with the classical picture of septicemia. Coxalgia, acute arthritis of the hip-joint, or sacroiliac articulation, perinephritic and periuterine inflammations must be excluded. The treatment is surgical. When the abscess has been opened and drained the suppurative process may heal, or a new infection of

the veins may occur. The author's cases showed the symptoms of puerperal infection which passed over partially, and three months later the picture of sepsis returned with the formation of the psoas abscess.

Puerperal Pyelonephritis.—Cyrille Jeannin (*Pro. Méd.*, Jan. 25, 1908) says that pyelonephritis from pressure of the gravid uterus on the ureter and retention of the urine in the pelvis of the kidney is not uncommon. It is an infection due to bacteria which arrive through the blood and the bacterium coli holds the first rank in its production. The differential diagnosis from puerperal infection is important. The author describes four cases of this affection. The date of the appearance of the trouble may be from a few hours to the third day after labor or later still. The beginning may be sudden, with a chill and high fever, or the fever may be lacking and there may have been a former attack some months previously. The diagnosis from puerperal fever is given schematically. Puerperal infection will arise after a laborious instrumental labor, on the third to the fifth day, temperature rising gradually within two or three days to attain its maximum; the pulse rises parallel with the temperature and the respiration. The uterus will be found subinvolved, the vagina lined with false membranes, vulva edematous, lochia absent or fetid and abundant. In pyelonephritis we have habitual constipation, appearance at any period after labor, rapidly rising temperature of a remittent type, pulse and respiration rising only during the fever. General condition is good, digestive tract in bad condition, there are no genital symptoms at all; albuminuria is constant; treatment excludes operation and curetting. It includes milk diet, moist, hot applications over the body, and cups over the kidneys, urotropin for the pyuria, and catheterization for retention of urine.

Maternal Impressions.—Speaking with evident seriousness and claiming that the leading obstetricians of the present day refuse to deny, even if they do not subscribe to the theory of maternal impressions, J. T. Rugh (*Arch. Ped.*, Nov., 1907) reports a case of congenital absence of the third and fourth fingers and metacarpal bones in a healthy boy of six years whose mother had been shocked during the sixth week of pregnancy by discovering that a friend had lost these portions of his hand. The same mother subsequently had two normal children.

Answering this communication, E. T. Shelly (*Pediatrics*, Jan., 1908) reviews the scientific evidence against this antiquated theory. He says that by the so-called "pressure theory," Dr. Rugh's case may be explained as follows: The amniotic sack surrounding the embryo having probably been a little too tight, or the quantity of amniotic liquid somewhat too scant, the amnion pressed on, or temporarily adhered to, the ulnar side of the distal portion of each "arm-bud" soon after it appeared, about the fourth or fifth week of embryonic life, and thereby checked the "sprouting" of the third and fourth fingers and their

metacarpal bones, and also caused the webbing of the fingers of the left hand. Speaking less seriously, but with quite as much logic as the advocates of the theory of maternal impressions, who overlook the 999 cases in which no coincidence of faulty development follows mental shocks, the writer asks why, if one crippled hand could produce, by the power of mental impressions, two crippled hands, was it that three crippled hands, under far more distressing conditions, failed to produce even one crippled hand, especially after the woman's impressionable nervous organism knew how? His peroration contains a summary of the accepted view of so-called maternal impressions, as follows: "As we try to contemplate, in our feeble way, the infinitely delicate technic by which nature makes and fashions and arranges from memory, in 280 days, without model or mold or measure, a countless array of diverse cells into that supremest product of the wondrous loom of life, that pink and boisterous miracle, a perfect babe, must we go to an uncanny superstition to learn why, now and then, some pigmy artisan in atoms, among the busy myraids in the workshop of ontogenesis, proves unequal to his task, to learn why nature cannot always be inerrant?"

GYNECOLOGY AND ABDOMINAL SURGERY.

Comparative Value of Different Operative Procedures for Retroversions and Retroflexions of the Uterus.—Maurice Bourcort (*Ann. de Gyn. et d'Obst.*, December, 1907) gives a careful review of the anatomy of the pelvis and genital organs. He states that we shall obtain the best results from operative procedures for retroversion and retroflexion if we make use of that operation in each case which best conserves the functions and the normal position of the organs. The abdominal equilibrium and the general health of the patient must be considered. Failure to regard these is the cause of the numerous failures in the treatment of these conditions. He describes all the different operative procedures that have been proposed for this purpose. His final conclusion is that the modern Alexander operation is the one best suited to unmarried women and young women who will probably have children. Gastrofixation is applicable to the woman who has passed the menopause, or who has had her uterus and ovaries removed for disease of those organs. It should always be done as a complementary operation to laparotomy for the removal of uterus and adnexa. Vaginofixation is rarely applicable.

Shortening of the Round Ligament for Backward Displacements.—John W. Taylor (*Jour. Obst. and Gyn. Brit. Emp.*, Dec., 1907), in reviewing a series of eighty-five cases of backward displacement of the uterus operated on and the round ligaments shortened, reports the following results. There was no mortality; in about fifteen or sixteen cases there was slight suppuration. In no case was there any untoward complications, save one case

of hernia. In only three cases has there been any indication of relapse, which two cases have stood the test for eighteen years. In fourteen cases, nineteen pregnancies have followed without any difficulty. In two cases the backward displacement was accompanied by hypertrophic elongation of the cervix, which excess was removed. Another case subsequently had a tubal pregnancy. The writer chooses his cases carefully, selecting the cases chiefly from those of complete displacement in single or early married life, where there is no hope of pregnancy, and serious complaint is made of constant backache, dysmenorrhea, menorrhagia and discharge due to the accompanying endometritis. If possible the writer puts a pessary in place to prove that most of the symptoms could be relieved by replacement before operating. When there are intraperitoneal adhesions or tumors fixing the uterus, or when there has been old pelvic cellulitis, it is obvious that drawing out the ligaments may be difficult or impossible.

Formation of a Suspensory Ligament after Hysteropexy.—Frank E. Taylor (*Pract.*, Dec., 1907) cites three cases of hysteropexy subsequently operated upon for some other uterine trouble. In all three cases well-formed fundal or suspensory ligaments were formed. Both ventrofixation and ventrosuspension are highly satisfactory as regards the cure of uterine retrodisplacements. Each method possesses certain grave disadvantages. Ventrofixation may cause serious dystocia; while ventrosuspension allows the formation of a fundal ligament which may be the cause of strangulation of the intestines.

Adenomyoma of the Uterus.—Thomas S. Cullen (*Jour. Amer. Med. Assn.*, Jan. 11, 1908), in the examination of fifty uncomplicated diffuse adenomyomata of the uterus, found that origin of the glands from the mucous membrane could be traced in every case. In six additional cases where squamous-cell carcinoma of the cervix complicated adenomyoma of the body the continuity was established in five cases. In two remaining cases of diffuse adenomyoma of the body, the clue as to the origin of the glands was destroyed by adenocarcinoma of the body. Thus in only one case out of fifty-six was the writer unable to trace the origin of the growth to the mucosa. All adenomyomata of the uterus in which the gland elements are similar to those of the uterine mucosa, and are surrounded by stroma characteristic of that surrounding the normal uterine glands, owe their glandular origin to the uterine mucosa or Muller's duct, no matter whether they be interstitial, subperitoneal or intraligamentary, solid or cystic.

Classification of Tumors of the Ovaries.—Le Jemtel (*Gaz. de Gyn.*, Jan. 1, 1908) considers the classification of ovarian tumors a somewhat difficult matter. He arranges them thus; neoplasms of the epithelium and stroma of the ovary, or hertiod tumors; adenomata and papillomata, or organoid tumors; heterotopic tumors, mycoid and dermoid cysts and teratomata; usually

found tumors, sarcoma, fibroma and endothelioma; superadded tumors, or degenerated dermoid and mucoid cysts; and secondary tumors. Clinical classifications, classification by benignity and malignity, by histology, etc., all fail in being satisfactory. This classification is analytical.

Ovarian Cyst.—Frank E. Taylor (*Jour. Obst. and Gyn. Brit. Emp.*, Nov., 1907) describes the removal of an ovarian cyst from a patient who eight months previously had typhoid fever. The contents of the cysts gave a pure culture of the *Bacillus typhosus*. The bacillus isolated from the cyst had nearly lost its vitality.

Medical Treatment of Menopause Symptoms.—Chas. Vinay (*Bull. Méd.*, Jan. 8, 1908) describes the treatment of menopause symptoms under two heads: opotherapy and symptomatic treatment. The use of ovarian substance or extract is directed to replace a supposed ovarian secretion which is lacking in the condition of ovarian atrophy, and to the absence of which the organism is no yet accustomed. The best form to use is the powder of the desiccated gland from the cow, sheep, or mare in full sexual activity. The dose is 125 milligrams in powder, pills, or pastilles. It produces polyuria, increase in elimination of phosphoric acid, and urea. It is an oxidizing medication. It is especially useful in the artificial menopause. The symptomatic treatment involves that for metrorrhagia, consisting of hot douches, ergot and similar drugs. Antipyrin is one of the best. Hydrastis produces decongestion of the pelvic tissues. Putrid metritis must be treated by strict antiseptic douching. Tachycardia is best treated by opium and digitalis. Pain in the bladder yields to soothing rectal suppositories. Purgatives, mustard foot baths, and the like relieve hot flashes. Nervous symptoms yield to hydrotherapeutics, and psychoses must be treated by isolation and superalimentation.

New Methods of Treatment in Gynecology.—Ernst Runge (*Munch. Med. Woch.*, Jan. 7, 1908) describes several new methods of treatment of gynecological troubles, giving the methods of adaptation of apparatus for treatment and the indications for their use. The first method described is the use of Bier's hyperemia, by adaptation of the glass vaginal speculum to the removal of air, after the instrument has been so inserted as to cover the cervix and make a closed cavity. The air is then abstracted by means of a syringe. This treatment removes retained secretions in the uterus, creates hyperemia of the mucous membrane, and causes rapid healing of ulcerations. It is applicable to all chronic inflammatory conditions of the uterus. Suction should be applied up to the point of pain, intermittently for a half hour. It cures cervical or fundal endometritis, ulcerations, chronic metritis, and parametritis. It is of use in curing fistulæ, and gives excellent results in puerperal mastitis. The use of hot air applied externally to the abdomen is of value in the same sort of cases as is hyperemia. Pressure by means of sand bags is used to cause resorption of exudates. It is also applied to the

uterus by means of a rubber balloon filled with mercury, inserted into the vagina which by its weight causes compression. This is useful for retroflexion of the gravid or nongravid uterus. Vibration massage is of value in constipation, for tender abdominal cicatrices, used by the vagina for exudates, hematocele and chronic pyosalpinx without fever.

Genital Tuberculosis.—A. Martin (*Berl. Klin. Woch.*, Jan. 20, 1908) says that genital tuberculosis is rarely primary. It is generally a secondary and descending infection of hematogenous origin. Its localization in the genital organs may be the most prominent symptom while the original focus of infection is concealed. Jung found that in the removed genitals that he examined 26 per cent. of the ovaries were tuberculous. Genital tuberculosis is generally found in the second and third decades of human life. It has no effect on menstruation in one-half of the cases attacked. There is little severe pain accompanying these lesions and in many cases the patients do not feel anything more than weariness. Genital tuberculosis generally prevents pregnancy. The diagnosis is difficult. The examination of the secretions is generally negative. Tuberculin injections in some cases produce a heightened sensitiveness of the adnexa, but in the author's experience this test has been unsatisfactory. When the lesions are ulcerative and attack the vagina, vulva, and cervix only the microscope will differentiate them from the ordinary inflammatory conditions of these organs. In two-thirds of the author's cases the disease was localized in the adnexa, in one-third in the uterine mucous membrane; in three out of fifty-three cases it was cervical, and in one vaginal. In young persons the presence of marked ascites with the absence of tumors that can be felt, and the involvement of the abdominal glands are in favor of tuberculosis. In older women these symptoms favor carcinoma. In accessible locations an energetic curetting followed by cauterization with *liquor ferri sesquichloridi* is valuable. Tuberculosis of the adnexa is generally suppurative or caseous, and is diagnosed at operation only, the peritoneum being involved. The indications are to remove the organs freely. With exudative peritoneal tuberculosis operation is generally beneficial. General treatment of the same nature as would be used for tuberculosis in other locations is absolutely demanded. Fifty-seven per cent. of the author's cases were subjectively and objectively cured.

Pelvic Peritonitis.—M. Tixier (*Gaz. des. Hôp.*, Jan. 23, 1908) says that pelvic peritonitis is not a separate disease but a simple reaction of the peritoneum in the presence of lesions of the organs contained. The peritoneum becomes inoculated by a drop of pus from a diseased tube and the reaction sets in. In general, salpingitis causes a closure of the tube by adhesions. The intermediate agent is then the lymphatic vessels which are charged with microbic agents from the uterine mucous membrane and propagate the infection to the peritoneum. Ovaritis may be present. The subperitoneal tissue becomes affected and thus the broad and

round ligaments are infected and a change takes place from a simple perimetritis to a pelvic suppurative cellulitis. The prognosis of pelvic peritonitis is that of the causative lesion. When the agent is the gonococcus and mildly virulent the condition heals. When it is a virulent streptococcus the result is different. The entire peritoneum becomes infected and the result is fatal. In cases that recover, adhesions fix the uterus and adnexa; but there is a marvelous power of resorption in the peritoneum, and the patient under good treatment of rest and ice applications may entirely recover with no adhesions. When there is no tendency to absorption of the pus it is necessary to operate to drain the abscess. The inconveniences of colpotomy are the dangerous complications that may ensue, and the failure to make a sufficiently long incision, which causes a long and exhausting suppuration. Vaginal hysterectomy often gives a perfect cure. Salpingectomy generally gives excellent immediate results but they may be only passing; pain persists with congestive attacks and the removal of the uterus becomes necessary. Total abdominal hysterectomy gives the best chance of perfect cure in fifteen or twenty days. The procedure of choice is total castration by the abdominal route with simple drainage. We must choose the most propitious moment for the operation when the acute symptoms are past.

Abortive Treatment of Gonorrhea in the Female.—F. Bierhoff (*N. Y. Med. Jour.*, Jan. 11, 1908) gives the following practical directions for treatment of the few cases which are recognized in their incipency: A microscopical examination of the urethral secretion or scraping and of the secretion at the vulvar orifice is made. The meatus is cleansed and the urethra and surroundings are irrigated with a $\frac{1}{4}$ to $\frac{1}{2}$ per cent. solution of protargol with the hand syringe or irrigator but no great degree of pressure. About 150 c.c. are used for the urethra and surroundings, after which about 150 c.c. of the fluid are injected, through the urethra, into the bladder, to be later expelled by the patient. The vulva is cleansed with 150 c.c. of the solution. A vaginal scraping is now made and examined, the sterilized platinum loop being passed well into the vagina. The nozzle of the syringe is gently inserted into the vagina, the stream of the solution passing into the vagina, and the nozzle inserted until the body of the syringe blocks the outlet to prevent the escape of the injected fluid. The injection is continued until the vagina becomes distended with this solution, which is then allowed to flow out. About 300 c.c. of the solution are used for this vaginal cleansing. A sterilized duck-bill speculum is inserted into the vagina, and the vagina, particularly the fornices and the cervical orifice, is cleansed by gently wiping with little cotton pledgets. A specimen of the cervical secretion, or a scraping from the cervical canal, is now made with the sterilized loop, and a microscopical examination thereof made. Should this be found to be free of gonococci, and to contain few or no pus corpuscles, the vagina is

lightly tamponed with several yards of narrow, absorbent gauze strips, saturated in 1 per cent. protargol solution, and the speculum withdrawn. If the vagina is infected a 5 per cent. solution is used. Usually, in from twenty-four to forty-eight hours, the vaginal secretion will be found to be sterile. If the vagina is not infected, its infection is prevented by this tamponade. A soluble urethral bougie of 5 per cent. protargol in cacao butter, an inch and a half long, is inserted into the urethra, and held there until a pad of absorbent cotton, saturated with 1 per cent. protargol solution, is placed over the urethral and vulvar orifices and kept in place with a "T" binder. The patient is now instructed to resist the desire to urinate, if possible, for several hours, so that the drug in the melting bougie may be kept in contact with the urethral mucous membrane for so long a period as possible. The pad covering the vulva is also kept moist with the 1 per cent. protargol solution. Rest in bed is of advantage. Bland diet should be ordered; all intoxicating or carbonated drinks avoided, and all highly spiced articles of food omitted from the dietary. A daily warm sitz bath, in the evening, completes the treatment. The tampon is left in place for twenty-four hours, when it is removed by the physician, and the treatment, as outlined, repeated. Should the patient desire to urinate, the moist pad is simply removed, and replaced at once. Within twenty-four to forty-eight hours, if the cure is to prove a success, the urethral secretion must be free of gonococci, as must also the vulvar and vaginal scrapings. After two such applications, if there be no more gonococci present, the tests are begun by omitting the urethral irrigation and bougie, and by substituting a vaginal irrigation of bichloride of mercury solution, 1 in 4,000, or a solution of $\frac{1}{2}$ per cent. zinc sulphocarbolate for the irrigation with protargol, and the vaginal tampon is entirely omitted. The warm sitz baths are continued for a few days longer. Should the test of the interruption of treatment be followed by no return of gonococcus-bearing secretion, we proceed to the alcohol test. Further control examinations must be made at intervals, and only when the urethral and cervical scrapings continue free from gonococci even after menstruation may the case be considered cured. Should gonococci reappear the treatment should be continued.

DISEASES OF CHILDREN.

Anorexia Nervosa in Children.—F. Forchheimer (*Arch. Ped.*, Nov., 1907) defines this condition as one of anorexia, in neuropathic girls and boys, accompanied by loss of weight, sometimes terminating fatally and showing no organic lesion. The conditions found in spoiled children who live upon improper food, and the loss of appetite with anemia, gastrointestinal diseases and tuberculosis are excluded. In children hysteria tends to be monosymptomatic and without stigmata. In four cases reported

by the writer these characteristics are fairly well marked. In an infant there was no symptom save anorexia; in one case there were psychical evidences; in another, the adult form of hysteria, and in the fourth anesthesia. All except the infant had some stigma of hysteria and a neuropathic history. Of the cases reported three recovered and one died, the parents of the last refusing treatment. For the treatment of anorexia nervosa the general therapeutic measures applied in hysteria should be carried out. It is necessary to study the individual child, and having decided upon a course, to follow it with absolute firmness. Occasionally it is best to start with severe measures and then relax, or it may be necessary at times to make the suggestive measures severe, using drugs, electricity and hydrotherapy for this purpose. In order that the best results may be obtained the child should be removed from its ordinary surroundings, preferably to a properly equipped institution. If the child presents serious symptoms of starvation, there should be no compromise; if the hysterical symptoms predominate and starvation is not excessive, home treatment may succeed. The feeding is the controlling factor and in the routine of the rest cure food is often accepted as part of the routine. Rectal feeding is of less value than in the adult. The writer has sometimes succeeded in getting the child to eat by leaving food by the bed and asking the nurse to give it a chance to eat without being seen by her. Gavage must always be held up before the child as the last resource.

Convulsions in Children.—H. Lowenburg (*Jour. Amer. Med. Assn.*, Nov. 23, 1907) says that in the treatment of convulsions in children colonic irrigation is the most valuable single remedy; for its antipyretic effect it cannot be surpassed. When given to meet this indication the temperature of the water should vary between 90° F. and 50° F. A rapid reduction in temperature can thus be accomplished without shock. The mechanical effect of colonic irrigation constitutes one of its best features. The toxic and reflex action of foreign substances, thereby removed from the lower bowel, is destroyed. A certain amount of fluid is permitted to remain within the bowel, and its subsequent absorption favors the dilution of toxins, already absorbed, and their easier elimination by the kidneys. By its cleansing effect on the lower bowel the latter is prepared for the reception and for the absorption of medicaments. The fluid may be plain water, physiologic saline or a weak bicarbonate of soda solution. The quantity of fluid depends on the object sought; if to reduce fever, irrigate until the fever is reduced; if to cleanse the bowel, until the fluid comes away clear. A low enema should precede the irrigation where constipation exists. Balneotherapy also constitutes a valuable hydrotherapeutic measure. The reduction of temperature, the relief of internal congestion and of pain are its chief indications. Cold bathing should never be practised but cool or tepid baths are useful agents. For the relief of internal congestion, even in the presence of fever, a hot bath, with

ice to the head and spine, is strongly indicated. It may be replaced by the hot pack or the hot mustard pack. If his efforts have not been rewarded by a cessation of the convulsion and a return to consciousness, it becomes the physician's function to cleanse the small intestine. The best purgative is castor oil given in the dose of from one to two fluid ounces, alone or combined with the spiced syrup of rhubarb. Failing with castor oil to secure a rapid bowel movement, croton oil, m. $\frac{1}{4}$, dissolved in olive oil, f5i, has been employed in occasional cases with admirable effect. Hypnotics and antispasmodics are indicated in the majority of cases, but these remedies are not to be employed indiscriminately in all instances, and especially not until temperature has been reduced and the gastrointestinal canal has been emptied. The best hypnotic is chloral hydrate dissolved in water and given per rectum following the colonic irrigation in the dose of 4 to 10 grains. It should be repeated, if necessary, within two hours, and may be administered alone or combined with double the amount of sodium or potassium bromide.

Primary Infantile Atrophy.—R. L. Thompson (*Amer. Jour. Med. Sci.*, Oct., 1907) emphasizes the constant finding of atrophy of the thymus gland in infantile atrophy, and reports a case in which there was marked glandular atrophy not limited to the thymus. The case was one of infantile atrophy of one year's standing, in which the infant was kept alive for a considerably longer period of time than is usual in such cases. The immediate cause of death was a terminal infection (bronchopneumonia). The principal histological change, aside from the atrophy of fat and muscle tissue, was marked atrophy of the medullary adrenals, thymus, thyroid and parathyroid glandules, which was so extreme as to attract attention macroscopically. The writer presents the results of a study of the parathyroid glands in twelve cases of infantile atrophy. He finds that in primary infantile atrophy the parathyroid glandules show changes which may be degenerative in type, but which are, for the most part, progressive, and consist in replacement of a varying amount of the gland parenchyma by connective tissue stroma. These changes are similar in nature to those which are constantly present in the thymus gland in this disease. These progressive changes are present in other ductless glands such as the thyroid and medullary suprarenal, especially in long-standing cases of the disease.

Precocity in Children.—In two interesting lectures upon the history and literature of this subject, in which he shows the ages at which many precocious and illustrious men produced their first, their first great, and their greatest works, L. G. Guthrie (*Lancet*, Dec. 7, 1907) says that precocity has for the majority an evil significance. The term precocity, though used in somewhat different senses, implies in general an unduly rapid mental development in comparison with some standard assumed to be the normal. Precocity in itself is not a pathological condition

tending to early decease or to premature mental decay; all eminent men have been precocious as children, although in some cases their precocity may have been unrecognized. It is admitted that a certain proportion of precocious children have died young, but it is maintained that precocity was not responsible for their decease. Similarly, it must be admitted that many precocious children do not fulfil the promise of their youthful days, and that there is some foundation for the popular belief that clever children make dull men. If brightness and ability were no longer regarded as morbid or unfavorable signs unless associated with nervous instability and hyperesthesia, and if teachers would refrain from pressing on bright and clever but neurotic children who show signs of impending mental exhaustion which are early recognized, the term precocity would lose much of its evil significance. The precocious child is not necessarily a genius but by careful management he may at least be prevented from becoming a failure in mind and body.

Why is a Child Right-handed or Left-handed?—In answering this question, G. M. Gould (*L. I. Med. Jour.*, Nov., 1907) states that two things need to be recognized: First, there is no inheritance of completed mechanism, or even of predisposition towards it. Either cerebral hemisphere may be the seat of the speech center, and it may innervate the more expert hand, with absolutely no inferiority of expertness in the less commonly chosen right half-brain. Thus heredity has, directly, nothing whatever to do with the existence of 97 or 98 per cent. of right-handed, and 2 or 3 per cent. of left-handed. Secondly, just as there is no endowment of right-handedness or left-handedness, as a completed mechanism, nor even of any sign of an inherited exceptional aptitude, so there is no completedness of the acquirement. In 97 per cent. and at the beginning of the function of *handedness*, the right eye is the better eye. Even in adults oculists have found out that, as a large rule, the right eye is more nearly perfect than the left, is less subject to disease, accident, etc. The rôle of heredity is that of passing down the more nearly perfectly formed eyes and the more nearly perfect right eyeball. The directly acting exceptional cause is the more imperfectly functioning right one at the time handedness is to become either the right or the left variety.

Ferments of Milk and their Relation to Pasteurization.—After reviewing recent studies of the ferments, etc., contained in milk, R. G. Freeman (*Journal Amer. Med. Assn.*, Nov. 23, 1907) says that milk for infant feeding should be pasteurized so as not to interfere with its biologic properties or chemical composition, but at a sufficient temperature to destroy the bulk of the bacteria present, including the tubercle bacilli. A temperature of 140° F. (60° C.) continued for forty minutes would seem to fulfil this condition. Milk so treated is unaltered in taste and retains the ferments and biologic characteristics of the milk unimpaired. It is not subjected to chemical change and is certainly much

safer than any raw milk at the present stage of the development of dairy hygiene.

Acute Poliomyelitis.—The treatment of this affection just as soon as the diagnosis is established is, according to V. P. Gibney and C. Wallace (*Jour. Amer. Med. Assn.*, Dec. 21, 1907), protection of the limb or limbs from strain at the joints by means of a trough, either of wire, wood, light steel or plaster-of-Paris, well padded with cotton batting; keeping the feet at right angles with the legs, the knees in slight flexion or very nearly straight, and the thighs on a line with the long axis of the body. One should not resort to massage or electricity or to vibro-massage or to any of those excitants of the muscles or nerves until one feels pretty sure that all inflammatory changes in the cerebrospinal axis have undergone resolution. The writers would advocate, as a further remedial measure in these early cases, artificial hyperemia of the parts in the neighborhood of the cord, such as cupping in the younger children, the Paquelin cautery in the older ones, iodine, and other forms of counter-irritation, if more vigorous ones cannot be employed.

Proteid Incapacity in Children.—H. D. Chapin (*N. Y. Med. Jour.*, Dec. 21, 1907) says that the class of cases which show actual proteid incapacity is made up of those who are permanently physically unfitted, and those who may be only temporarily unfitted, through digestive disturbance, for digesting proteids. Those in the first class will die. Many of the second class can be saved by mother's milk or by the use of very light fluid diet that remains fluid or soft in the stomach, until digestion becomes stronger. In some of these cases the use of vegetable proteid with milk proteid, especially vegetable proteid rich in iron (oat or legume) may cause a general upbuilding, and improved digestion will follow. Whenever there is difficulty with milk proteids in a fairly well-nourished child, mixed proteid feeding, using high proteid gruels with the milks, should be tried, for there may be only proteid idiosyncrasy present.

Treatment of Tardy Malnutrition.—Under the name of tardy malnutrition, C. G. Kerley (*Jour. Amer. Med. Assn.*, Nov. 9, 1907) refers to the condition met in children who, after the age of two years, while free from diseases such as tuberculosis, syphilis and chronic nephritis, show marked physical developmental defects in that they are under weight or are both undersized and under weight. An excessive output of energy and an absence of adequate rest produce loss of appetite, constipation, indigestion—a chain of conditions the end-result being malnutrition and its invariable accompaniment, anemia. When one gives tonic drugs—cod liver oil, etc.—one will get more prompt and permanent results by establishing the child along lines of living such as child life demands. A common sense diet, an absence of food and sweets between meals, with the one and a half or two hours rest after the noonday meal, has been proved of great therapeutic importance. The best diet consists of milk, red meat, which is

not given more than once a day, poultry, fish, eggs, oatmeal and dried legumes, such as peas, beans, and lentils, these being given in the form of a puree. Malnutrition children usually bear sugar badly and have often taken it in excess, so, while it is allowed, it is given in reduced quantity. In using forced nutrition in children it is wise not to give more than three full meals a day.

Disadvantages of Low Proteids in Infant Feeding.—A. Hand (*Jour. Amer. Med. Assn.*, Nov. 16, 1907) says that the first statement usually made with regard to bottle feeding is that cow's milk, the best available substitute for mother's milk, is too high in its proteid content for the infant stomach to digest. In avoiding this feature, it seems as though there had been for a time a tendency to go to the other extreme and feed infants with mixtures that were too dilute. The disadvantages which appear under this plan of feeding are: Constipation; failure to gain steadily in weight, or else the gain is at a very slow rate; fretfulness and poor sleeping habits; the development of rachitis in greater or less degree; the frequent appearance of curds in the stools; anemia; an increase in the natural liability to develop acute enteritis, and in the susceptibility to various infections; and sometimes very marked infantile atrophy. These cases may be treated by keeping the proteid element at a low point such as the impaired digestive power can handle, but the writer has usually had better results by employing the milk modifications which a normal infant of the corresponding age would take and predigesting this for from two to three weeks.

Proteid in Infant Feeding.—T. G. Allen (*Arch. Ped.*, Dec., 1907) says that in order to avoid giving infants too much or too little proteid there should be a standard to which the food should be made to conform. This may be determined by study of the nitrogenous waste in the urine, a difficult method. Two other methods give approximately the same results. The proteid balance for an adult man is well known, being, about .03 of an ounce for each pound of the body weight, or, let us say, a proteid quotient of 3. Allowing a growing child one-third to two-thirds more than this, we would fix the minimum proteid quotient at 4 and the maximum at 6. The study of a number of cases in which the weights of the babies, the quantities of milk taken in the day, and the proteid content of this milk shows that the proteid quotient for the first week lies between 1 and 1.5, for the second week between 2 and 2.5, and for the third week between 3 and 3.5; that is, the proteid quotient for the first three weeks is approximately the number representing the week of the baby's age. Thereafter the proteid quotient is approximately 4. This agrees very closely with the result obtained by the second method when we add one-third to the proteid quotient of an adult to allow for the greater cell-growth and cell-activity in the child. The practical application of this standard is as follows: One ounce of good milk contains 4 per cent. of proteid, or .04 of an ounce. Therefore our standard minimum daily proteid

will be supplied by one ounce of good milk for each pound of the baby's weight, and our maximum daily proteid quotient, which we placed at 6, is supplied by 1.5 ounces of milk. This application of the minimum and maximum daily standards—one ounce of milk for the minimum and one and one-half ounces for the maximum—holds good whether the milk used be whole milk, skim milk, buttermilk, top milk, or a mixture of cream with either whole milk or skim milk, in fact, for any undiluted milk.

Painless Removal of Adenoids and Tonsils.—H. Grade (*Chic. Med. Rec.*, Nov. 15, 1907) favors the abolition of pain in operations for adenoids by submucous injections of cocaine and adrenalin. A hypodermic needle 10 c.c. in length is thrust into the posterior wall of the pharynx as high as possible after elevating the soft palate with a blunt hook. Perhaps a curved needle may even be more suitable. More efficient even is the injection higher up through the nasal passage, if not obstructed. After using a cocaine spray a blunt cannula just thick enough to serve as a shield for the hypodermic needle is put through the nasal passage. The long hypodermic needle is thrust through this into the pharyngeal tonsil itself. About ten minutes after a well-carried out injection the patient does not feel the pain of cutting. An important advantage of interstitial injection of cocaine and adrenalin is the almost complete absence of bleeding at the time. With a submissive child, the injection all around the periphery of a tonsil of about ten drops of a 1 per cent. or even $\frac{1}{2}$ per cent. solution of cocaine with adrenalin 1:4000, by means of a very fine hypodermic needle attached to a heavier extension, will give complete insensibility to cutting. Pain is, however, felt when any strong traction is made, especially with the snare. A marked reduction of bleeding facilitates the operation and makes the injections a valuable aid even when general anesthesia has to be employed.

Abdominal Belt for Whooping Cough.—T. W. Kilmer (*Jour. Amer. Med. Assn.*, Nov. 23, 1907) has compiled the statistics of twenty-eight observers in regard to the value of the elastic abdominal belt in pertussis. Of the 550 cases, 484, or 87 per cent., were improved by its use. Complications occurred in 125 cases, but the majority of these existed before the application of the belt. The chief point claimed for the belt is the restriction of vomiting, this sometimes resulting in a gain in weight in spite of the disease. The writer finds in the literature on pertussis that in the year 300 A. D. it was said that "a tight cord tied around the middle of the body will help violent coughs."

Treponema Pallidum in Infantile Gangrene of the Cornea.—Sydney Stephenson (*Lancet*, Dec. 28, 1907) records four cases of keratomalacia, in all of which the *treponema pallidum* was found in scrapings from the necrotic cornea. Keratomalacia is defined as a grave affection of the cornea, apt to supervene in babies whose vital resistance has been seriously reduced by general illness, such as congenital syphilis, tuberculosis, or ileoco-

litis. Cases of keratomalacia are characterized—first, by athrepsia, and, secondly, by a sloughing condition of one or both corneæ, associated with but slight symptoms of local reaction, such as redness, reflex blepharospasm, or swelling of the eyelids. The necrosis of the cornea, contrary to what might be expected, is not due to any particular microorganism. Practically any pyogenic microbe, other conditions being favorable, may cause keratomalacia. The writer points out that as spirochætes have been found in the tissues, such as the cornea, iris and ciliary body, of seemingly unaffected eyes of syphilitic fetuses and babies, the question arises whether his findings were not merely a coincidence.

Bacteriology of Meningitis.—From a study of 1800 collected cases, including twenty-six of his own, F. S. Churchill (*Arch. Ped.*, Dec., 1907) concludes that meningitis in early life is caused by a variety of microorganisms, chief among which in frequency are the diplococcus intracellularis meningitidis, or meningococcus of Weichselbaum, and the pneumococcus of Fraenkel. Others are streptococcus, staphylococcus, bacillus pyocyaneus, colon bacillus, typhoid bacillus, proteus vulgaris, bacillus lactis aërogenes, gonococcus, anthrax bacillus and influenza bacillus. A large proportion of cases, especially in epidemics, is due to the meningococcus. A considerable number of cases, however, is due to the pneumococcus, variously estimated at from 11 per cent. to 22 per cent. in epidemics and higher in sporadic cases. Mixed infections are infrequent. The meningococcus is very widespread in its distribution in the body. It gains access to the system through the nose and throat. It produces a true meningococcus septicemia, or "meningococcemia." The meningococcus is found in the nose and throat of healthy individuals living in close contact with meningitic cases of this type. Such individuals should be isolated, as by their presence abroad they help spread the disease. The type of meningitis cannot be determined from the clinical picture. This can be done only by lumbar picture. The prognosis in the pneumococcic variety is more unfavorable than in other types. Meningitis due to almost all the known pathogenic bacteria does occur, but is infrequent. As the meningococcic is the only type which is really contagious, the throat and nose and also the spinal fluid of all cases should be examined to determine the variety present in order to protect the community. The meningococcic cases certainly should be quarantined, possibly also the pneumococcic.

Cerebrospinal Meningitis.—J. J. MacKenzie (*Mont. Med. Jour.*, Nov., 1907) says that the organism of this disease is a strict human parasite; its very slight vitality in culture media renders it most unlikely that it spreads in any other way than from man to man. The presence of the organism in the naso-pharynx of nonmeningeal cases, either with or without pharyngitis, explains many of the peculiar features of the epidemics, especially the gradual development of it, its long persistence in houses and localities and its tendency to flare up again when apparently

over. It explains also the sporadic cases and the small local epidemics, since it is quite possible that certain healthy individuals are bearers of the cocci, meningococcus carriers, and when favorable soil is met the disease breaks out. All these facts point the way to prophylactic measures, that is, the isolation of those suffering from the disease and also of those who are infected.

A. D. Blackader (*ibid*) states that the treatment includes: 1. Prophylaxis, the use of a naso-pharyngeal disinfectant solution. 2. Prompt measures at the outset to check the development of the organism. These include lumbar puncture and the injection into the spinal column of immune serum or normal human serum. 3. In placing the system under the best possible conditions to withstand the poisonous endotoxins liberated and to immunize their action. This includes the avoidance of all peripheral irritation.

Differential Diagnosis of Measles and Rubella.—H. M. McClanahan (*Jour. Amer. Med. Assn.*, Dec. 7, 1907) states that the important points of difference between measles and rubella are the marked prodromal symptom of measles and the presence of the Koplik spots on the inside of the lips and cheeks during this stage. The rash in measles is more confluent and requires a longer time for its appearance; it also fades more slowly. Lastly there is the possibility of complications following measles.

Revealed Tuberculosis in School Children.—Of the rôle of schools in the spread of tuberculosis, H. C. Lecky and W. C. Horton (*Lancet*, Dec. 28, 1907) say that the amount of revealed pulmonary tuberculosis among school children is very small. They found, in Brighton, three cases in 806 children. This is supported by the results at Dundee, Aberdeen, and London. The figures of pulmonary tuberculosis among school children at Edinburgh are so large as to need further examination. The extremely small percentage of cases of pulmonary tuberculosis found among unselected school children in every center investigated except Edinburgh and the total absence of refusals to allow school attendance in Zürich on account of tuberculosis, as contrasted with the relatively large percentage of cases of pulmonary tuberculosis found among school children specially referred to a medical man owing to a suspicion of, or evident ill-health indicate that when pulmonary tuberculosis does start in children they quickly show it by failing health and are removed from school. The schools cannot, therefore, be considered as places where much tuberculosis is spread unless by infected teachers.

Cutaneous Tuberculin Vaccination in the Diagnosis of Tuberculosis in Children.—W. J. Butler (*Med. Rec.*, Feb. 1, 1908) describes the technic of making a cutaneous vaccination with tuberculin as follows: Make a 25 per cent. solution of old tuberculin in salt solution. A similar dilution is used in which one volume of a 5 per cent. solution of carbolic acid in glycerin is substituted for one of the volumes of salt solution. Place two drops, one of

each solution, separated from each other by a space of two inches, on the outside of the arm, which should be prepared as is customary for vaccination. A small lancet, with a dull tip, which is about one-sixteenth of an inch wide and placed vertically in a metal handle, is used to abrade the skin through the vaccine drops by a rotary motion, removing only upper layers of epidermis. The tip is then cleaned, and at a point midway between the vaccination marks a third abrasion is made without any tuberculin being applied, to serve as a control. If the reaction is positive, a papule, varying in size from 5 to 20 mm. in diameter, at first bright red, later becoming a dark red with a slight areola, will appear at either vaccination point, in the first twenty-four hours; occasionally they are delayed to the second twenty-four hours. Sometimes little vesicles with turbid contents, later becoming confluent, appear over the inoculation site. These fade and disappear in course of several days, leaving at times a little pigmentation. At the control point, and at all three points, in case the reaction is negative, the slight reddening that follows the scarification disappears in twenty-four hours without any further changes. It would appear that a positive reaction in a child is undoubtedly diagnostic of tuberculosis; that failure of the reaction is of little antidiagnostic significance in the terminal days of a tuberculous infection; also that its result in cases of obsolete tuberculous foci might prove negative unless the vaccination was repeated. All in all, it would seem to be a valuable and practical diagnostic aid in tuberculosis, possessing advantages over the hypodermic use of tuberculin in children to such an extent as not to require comment.

Tracheo-bronchial Adenopathies in their Relation to Chronic Pulmonary Tuberculosis in Children.—Charles Leroux (*Ann. de Méd. et Chir. Inf.*, Dec. 15, 1907) has made observations on 500 cases of bronchio-tracheal adenopathies, examined clinically and radioscopically. He states that glandular tuberculosis is extremely frequent in childhood, and even in the nursing infant. It is the first localization of tuberculosis in the child, whatever its way of entrance. In nursing infants and young children it is much more frequent than ganglio-pulmonary tuberculosis. In children old enough to go to school we begin to have true ganglio-pulmonary tuberculosis. Clinical and radioscopic examinations show that these adenopathies can be recognized if sought for in the right way. Early diagnosis is most important since this glandular tuberculosis may lead to a secondary pulmonary, meningeal, or peripheral tuberculosis. Glandular tuberculosis is one of the most curable forms of the disease. It can be perfectly cured by hygienic measures, with a sojourn in the country, or preferably at the seaside. Cervical adenopathies treated at the seaside are cured in 75 per cent. of the cases met with, and tracheo-bronchial adenopathies in 50 per cent. of the cases. These children must be removed from their bad surroundings, and must be protected against the contagious diseases of childhood, which so frequently

cause their death, and be placed in surroundings far from any source of infection. This stay at the seaside or in the country must be a long one. Cases apparently cured after a few months relapse again. The stay must be at least a year to obtain solid and durable results. The maximum frequency of pulmonary tuberculosis beginning in the apex of the lung is at from twelve to fifteen years of age. There are several modes of entrance of tubercular germs: through the lungs, when a pleurisy or a pneumonia is followed by an enlargement of the bronchial glands; by way of the rhino-pharynx, or skin, at the cervical or subclavicular glands; or by ascending lymphatic penetration through the intestine of bacilli that are swallowed. The last seems to be the rarest of the three ways of infection. The signs of gangliopulmonary involvement are rough respiration at the apex without bronchophony or increased fremitus or change in resonance, decrease of physical signs from below upward; and accentuation of the signs in the subspinous space more than in the subclavicular. As soon as there are bronchophony and exaggerated fremitus there is a pulmonary lesion. Radioscopy is of great value in recognizing enlargement of the bronchial glands.

Seashore Treatment of Tuberculous Arthritis in Children.—A. H. Miller (*Boston Med. and Surg. Jour.*, Nov. 14, 1907) describes the treatment of these cases during the summer of 1906 at a temporary hospital in Narragansett Bay opened by the Rhode Island Hospital. From sunrise to sunset the children lived out of doors and the windows of their sleeping rooms were never closed. All patients bathed in the salt-water, as many as possible bathing every day for half an hour. The brace and extension straps were removed during the bath. Every precaution was taken against movement of the affected joint while the brace was off, and as soon as the bath was over the patient was dried and the brace and extension were replaced. Patients with plaster jackets were allowed to wade every day. Patients in bed were bathed every day on a frame or in a basket which was wheeled into the water. Surgical dressings were done after the bathing hour. No chemical antiseptics were applied to the wounds. Drainage tubes and gauze packing of sinuses were not allowed. The soiled dressing was removed, the surface dried, and a sterile pad applied, which remained until after the next bath. On the days when the patients did not bathe in the ocean, the wound was cleansed with salt solution and a fresh pad was applied. The affected joints must at all times be kept quiet. With this exception, activity was everywhere encouraged. Eleven patients had come from the wards of the hospital; twelve had come in beds or wheel chairs; thirteen on crutches; and seven walking unaided. At the end of two and one-half months' treatment, it was necessary to return only two to the hospital wards; two were in beds or wheel chairs; eighteen on crutches; and twelve walking unaided. Of the twenty-five discharging sinuses, eleven were entirely healed. All sinuses were improved and several healed

soon after the return from the summer hospital. During the winter following their first outing the patients uniformly continued to improve for a time after returning to their homes. No one of the sinuses which had healed broke out again. In most cases the improvement continued, but two patients began to fail after a few months and in the spring of 1907 were in practically the same condition as a year before. The cause of this failure was directly traceable to the surroundings and insufficient nourishment.

In an excellent, concise presentation of the subject of treatment of joint tuberculosis in children, Leonard W. Ely (*Med. Rec.*, Dec. 7, 1907) says that while abroad the present tendency is to regard the seashore as peculiarly adapted to these cases, this, in his opinion, is incorrect. The seashore is probably the best place for them, merely because children in general thrive best at the seashore. To establish the value of seaside hospitals, as compared with those in other country places, would require an analysis of very voluminous statistics of the personal element of those in charge and exclusion of diagnostic errors. With all care cases have been admitted to Sea Breeze Hospital which have healed up promptly under potassium iodide and mercury. It is the writer's opinion that, in contradiction to the general idea, syphilitic bone and joint disease in children is rather frequent, and often very difficult to diagnose off-hand, especially as many children with unmistakable tuberculous joint disease show the notched teeth and other stigmata of hereditary syphilis.

Cardiac Dilatation following Acute Infectious Diseases.—J. E. Blake (*N. Y. State Jour. Med.*, Nov., 1907) emphasizes the following points: In all toxemias the heart is more or less affected, particularly in acute infectious diseases. In typhoid, influenza, rheumatism, diphtheria and scarlet fever, the heart involvement is very frequent and is very often out of all proportion to the severity of the original attack. The symptoms of cardiac weakness may develop at any time after the beginning of the attack, but most commonly after convalescence has begun. The first evidence of cardiac involvement is revealed by changes in the first sound heard at the apex and diminished tension in the arteries. If the loss of cardiac tone is sufficiently great, dilatation follows. This is characterized by irritability of the heart, softness, weakness and irregularity of the pulse. Symptoms of failing circulation depend upon the degree of muscular weakness and extent of dilatation. A dilatation out to one finger's breadth beyond the nipple line is usually recovered from; two fingers' breadth is exceedingly dangerous, and three fingers' breadth is usually fatal. Vomiting in a case of acute dilatation is usually the precursor of sudden death. All cases of infectious disease should be carefully watched and appropriate measures taken to reduce the work of the heart to a minimum, prevent strain, and eliminate toxins as rapidly as possible before symptoms of heart failure threaten or are present. In every case of infectious dis-

ease the heart should be frequently examined until convalescence is fully established.

Dysentery and its Serum Treatment.—P. Aubry (*Rev. Fran. de Méd. et de Chir.*, Dec. 25, 1907) divides dysentery into the amebic or tropical form, rare in temperate climates, and the bacillary which belongs to temperate climates and is sometimes very fatal, especially in children. Antidysenteric serum is the means of saving the lives of many of the little patients. It has been tested in animals and has now been used long enough in man to show its value. It renders the pain less, the stools less frequent and more fecal, shortens the course of the disease, and reduces the fever and the general symptoms. It has reduced the mortality of the disease materially. Attacks of moderate severity end in twenty-four to thirty-six hours and severe ones in five or six days. The amount injected should be twenty to thirty cubic centimeters in moderate cases, and eighty to one hundred in severe cases. By injecting from eight to ten cubic centimeters an immunity of eight to ten days may be obtained in times of epidemic.

Lumbar Puncture in Meningeal Forms of Typhoid Fever in the Child. Its Therapeutic Value.—Ch. Rocaz and Firmin Carles (*Gaz. Hebd. des. Sci. Méd.*, Jan. 26, 1908) says that meningeal complications of typhoid fever are quite frequent. There are four principal forms: Meningitis may occur in the second week with headache, vomiting, constipation, etc., and disappears after some days. In a second type we have the picture of acute cerebrospinal meningitis. Again the beginning of the attack of typhoid shows all the symptoms of acute meningitis. The fourth form is characteristic of infants and occurs in the course of a slight attack of typhoid with convulsions and rapidly fatal issue. Lumbar puncture clears up the diagnosis of the condition quickly. If pus is removed it contains bacilli of Eberth and other secondary agents. The fluid evacuated may be transparent and contain bacilli of Eberth. The fluid may be clear and contain abnormal cellular elements, abundant lymphocytes. The composition of the fluid may be normal but it may spurt out under abnormal tension. In the first two cases there is a direct infection of the meninges by the typhoid bacilli. In the third case there are microbic toxins which irritate the meninges. The same cause brings about hypersecretion of the arachnoid fluid and hyperextension. Repeated lumbar puncture will relieve this tension. It will remove some of the bacilli when they are present and some of the contained toxins. It also lessens the pressure on the nerve centers. For all these reasons it is a valuable therapeutic measure. B-4

Effect of Galvanism on the Muscular Irritability in Children Affected with Tetanus.—Paula Philippson (*Berl. Med. Woch.*, Nov. 25, 1907) has shown that the galvanic current applied to the muscles of children ill with tetanus is capable of producing a lessening of irritability. The arm of the child is immersed to the elbow in a solution of calcium in a glass cylinder. In this

cylinder is placed the anode. Calcium is set free by the anode and enters the body. The indifferent electrode is placed on the sternum. The current passes smoothly for from eight to ten minutes. The electrical irritability of the muscles is then found to have been lessened by the passage of the galvanic current.

The Epileptic Character in Child and Scholar.—Georges Paul Boncour (*Le Prog. Méd.*, Dec. 21, 1907) describes epilepsy as consisting of a paroxysm and an interparoxysmal state. The epileptic character consists in an exaggerated excitability, which is shown by rapid emotional transitions, sudden and violent impulses, taciturnity, egoism, quarrelsomeness, and dissimulation. These people are difficult to live with. They cry and laugh easily, they love to destroy things, and to torture animals or other children. But the instructor should be on his guard against placing children who are simply quarrelsome, and spoiled at home in this category, and giving them the undeserved position of an epileptic placed in a special class.

A Study of the Liver in Umbilical Infections.—G. Durante (*Bull. de la Soc. d'Obstet. de Paris*, Dec. 19, 1907) describes an acute and a chronic form of umbilical infection. In the acute form there may be abscess, inflammatory infectious hepatitis, in which there are miliary nodules, or a diffuse cellular infection, and degenerative hepatitis with necrosis. When the microbes are less abundant and less virulent we get a chronic hepatitis. There is progressive interference with the hepatic secretion with little fever, slight icterus and a persistent pallor. There is acholia and dyscholia, the weight remains stationary and finally the child dies without apparent reason. At autopsy there is found an intense fatty degeneration of the liver. In other cases we find a sclerosis. There are benign forms of infection which result in a cure but in which the traces of the early disease are left behind in the liver. Fever and icterus appearing at the time of the falling of the umbilical cord should attract the attention of the physician to the condition of the umbilicus. A great part of the cases of icterus in the new-born arise from infection of the liver through the umbilicus.

Blood Modifications in Infantile Scurvy.—Prosper Merklen and Leon Tixier (*Gaz. des. Hôp.*, Jan. 9, 1908) have obtained results somewhat at variance from those usually gotten in examinations of the blood in a case of infantile scurvy. The authors made their examinations before and during the administration of iron and tonics with antiscorbutic diet. The examinations were repeated daily. The patient had painful pseudo-paralysis, marked anemia, but no ecchymoses or hematmata. Most observers have found a relative diminution of the red blood cells, a moderate leukocytosis, and a considerable decrease of the hemoglobin. The authors found the number of red blood corpuscles markedly increased, while the hemoglobin was reduced. After the use of iron for a few days the picture had changed, and

in ten days the formula was normal. This shows that iron is of the greatest value to these children. The number of blood cells lessens with the increase of the intensity of the anemia. The diminution of hemoglobin is more marked and sure than the change in the blood corpuscles, which is subject to daily modifications. Myeloid reaction is frequent and is shown by the presence in the blood of myelocytes. This should not be considered as a specific symptom of hemorrhagic diseases. It is allied to toxic infections of considerable duration.

Glandular Fever.—J. R. Clemens (*Brit. Jour. Child. Dis.*, Dec., 1907) has studied an epidemic of sixteen cases of this affection occurring in a male orphan asylum, the cases all occurring in one dormitory in the first three months of the year and the series ending abruptly on fumigation. The patients were from six to thirteen years of age. The period of incubation was seven to ten days. The opsonic index for *Staphylococcus albus* was positive and high. Blood counts showed in most cases a slight leukocytosis. The pus from one case, in which a gland suppurated, showed streptococci only on culture. In seven cases the optic discs were hyperemic; three others showed optic neuritis. The axillary glands were enlarged and tender, mere enlargement not being symptomatic of glandular fever. In two cases marked enlargement of the mediastinal glands was observed; in one case with glossitis the submaxillary glands were involved. Enlargement of the superficial and deep cervical lymph nodes is pathognomonic of the affection. There was no sequential involvement of these glands as has been described. The opsonic index determinations were made during the convalescent period of the disease, and the finding of a positive and high index for the *Staphylococcus albus* points to an acquired increased resistance to this germ which must have been developed during the glandular fever attack, and this fact points to *Staphylococcus albus* as the probable cause. The fact that the cervical glands of the neck were the first sets of glands involved suggests that infection entered through some portal in the area drained by these glands—the naso-pharynx is the most probable seat of this infection. The diagnosis in epidemics is easy. In a sporadic case the points on which a diagnosis would be made would depend on the sudden appearance of an acute cervical adenitis, the peculiar contour of the neck, the exclusion of all other sources of which the enlarged glands would be symptomatic, the anatomical topography of the glands affected, and the early involvement of the axillary glands. The eye-ground findings if as above described would make the diagnosis certain; likewise the syndrome complex of an acute enlargement of the cervical glands with acute nephritis.

Right-angled Contraction of Tendo Achillis as Cause of Halting and Stumbling in Children.—A. H. Tubby (*Brit. Jour. Child. Dis.*, Dec., 1907) describes several manifestations of this condition. A child is brought for advice by his parents with a statement

that he very soon becomes tired in walking, has pains in his calves and around the knees. He is not able to run well nor swiftly, and shortly after starting he stumbles and falls. In a second type the gait is shambling, and the child walks with short steps and bent knees and is unable to take as much exercise as his companions. In a third variety a sprained ankle is a frequent occurrence. The most common type is one supposed to be flat-foot, the feet being everted though the arches have not fallen. A fifth type turns the toes in and walks on the outer side of the foot. All these states are referable to one cause. In the normally constructed individual, if the knee be fully extended, the foot is capable of dorsal flexion to within 18° of a right angle. In walking it is essential that this dorsal flexion should be fully exercised by the posterior foot just before it leaves the ground. All the clinical phases described are due to varying degrees of loss or dorsal flexion due to some degree of contraction of the calf muscles and tendo Achillis. The first type mentioned becomes tired because the stride is habitually shortened and the strain upon the calf muscles and tendo Achillis accounts for the pain and weariness in those parts. In the second type of case, the child with shambling gait, if the calf muscles and tendo Achillis are too short one of two things must result if rapid progression is desired. The child must either walk partly on his toes, with the heels slightly off the ground; or bend the knees so as to relax the calf muscles and tendons, and thus obtain full dorsal flexion at the ankle. In the cases with frequently sprained ankles the explanation is that the habit of bending the knees in walking has not been learned; and at the particular moment in striding forwards the foot in the rear is not planted firmly on the ground, but is in a condition of unstable equilibrium, so that if it rests on any inequality it is readily twisted inwards or outwards, and a sprain results. In the fourth and fifth phases, the flat-footed child and the child walking with inverted feet, the distance between the lower end of the femur and the heel can be shortened to accommodate the contracted structures in one of two ways, by turning the foot either outwards or inwards at the ankle. In examining the child he should be seated, the knee fully extended, and foot brought into a straight line with the leg. The foot should then be slowly dorsiflexed, and the moment resistance is encountered or pain is elicited passive movement should be stopped and the angle taken by the goniometer. Right-angled contraction of the tendo Achillis is due most often to infantile paralysis which has affected chiefly the anterior muscles of the leg, which appear to have nearly recovered, less frequently it is associated with tonsillitis and diphtheria. If the foot of the fully extended limb is incapable of dorsal flexion beyond a right angle, the proper treatment is to lengthen the tendo Achillis by an open operation in which the tendon is lengthened to the required extent by a Z-shaped incision and suturing. In cases where there

is a diminution of only 5° or so of the angle of dorsal flexion an immediate operation is not to be advocated, but passive and active movements, to stretch the contracted structures, should be sedulously practised, and much assistance is afforded by prescribing a surgical boot, with an outside steel to the calf and a toe-uplifting spring, the constant action of which stretches the shortened soft tissues. If this fails we can resort to the operation mentioned.

CORRECTION.

In the December Journal, page 872, the remarks of Dr. E. H. Grandin, in reference to the use of the uterine sound (line 8) should read—"I only use it for purposes of *differentiating* tumors from the body of the uterus," etc.

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THE SIGNIFICANCE OF PAIN IN PELVIC DISEASE.*

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WHEN one considers the fact that it is the symptom of pain which, more frequently than any other, brings the patient to the physician for advice, and that it is upon this same symptom, more than any other, that the clinician must in many cases rely for information concerning the location and character of the underlying lesion, it will be conceded that from the standpoint of both the patient and the physician, pain is probably the most important of the symptoms of disease, and hence no apology is needed for the subject of this paper. If an excuse were needed, however, it could readily be found in the fact that in the field of gynecology, probably more than in any other branch of medicine, there is a widespread, and I fear, a growing tendency to a neglect of the anamnesis, especially with regard to the symptom of pain. While not meaning to belittle in any way the importance of a careful and thorough physical examination, nor even to subordinate its value to that of such a purely subjective symptom as pain, I am convinced that by diligent and painstaking inquiry concerning the various aches and pains of which the gynecological patient so frequently complains, together with the judicious rating of these complaints which can come only from a broad and comprehensive consideration of the patient's physical and mental make-up, much of interest and real value

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may often be learned. Medicine in all its departments, is too far from being an exact science to justify the physician in basing his diagnosis, prognosis and treatment all upon the physical findings alone, by "rule of thumb," as it were, rather than by a careful consideration of the personal equation presented by each patient. With the development of modern surgery and the comparative simplicity and safety of laparotomy at the present day, there has been developed, as Deaver points out, an unpleasant tendency to surgical superficiality, and it is as unfortunate as it is true that with not a few gynecologists diagnosis resolves itself largely into a question of whether or not to operate. While I, of course, realize that in many instances the exact nature of a surgical lesion cannot be ascertained until the time of operation, yet I feel that the true student of surgery is not he who looks upon each surgical problem presented to him as a Gordian knot, to be unraveled only by the ever-ready and too convenient scalpel.

It is not my purpose in this paper to take up in a categorical manner the various forms of pelvic disease and their relations with pelvic pain of various kinds, but rather to consider in a broad and more or less generalizing manner some of the most common types of pain associated with pelvic disease, and the laws which seem to govern them. The internal generative organs of the woman differ considerably in their importance as sources of pelvic pain, the uterus being probably of less importance to the gynecologist from this standpoint than are the tube and ovary. That the uterus may be the source of pain, however, is well exemplified by the frequent occurrence of pain as a result of the presence within the uterine cavity of foreign bodies, such as blood clots, which by the irritation of their presence set up expulsive contractile efforts on the part of the uterine musculature, thereby eliciting the colicky pains so characteristic of this condition—pains which, to all intents and purposes are merely miniature labor pains. This, at least, is the time-honored explanation of pain of this sort, and so far as I know, it has not been entirely disproved by the recent interesting developments in connection with the causation of pain in other hollow muscular viscera, especially the intestine, which in many ways can be considered as analogous to the uterus.

As is well known, Nothnagel a few years ago asserted his belief that the pain of intestinal colic is due to the irritation of the terminal intestinal nerves, which is produced by the tonic

contraction of the muscular fibers in the wall of the gut. When, however, it was shown by Lennander that the intestinal nerves are insensitive to all ordinary pain stimuli, he receded from his position, and in his "second hypothesis," published shortly before his death, he expressed the belief that even though under ordinary circumstances the intestinal nerves are comparatively insensitive to pain, this sensibility is markedly increased by the local anemia produced by the muscular contractions in the wall of the affected loop of gut, and that in this condition they can therefore register sensations of pain.

This second theory, however, seems also to have been satisfactorily met by Lennander, who, by means of observations in the course of abdominal operations performed under local anesthesia, demonstrated that even though, by means of the faradic current, the gut be thrown into a condition of tetanic contraction so intense as to make it rigid and almost bloodless, the individual will still be free from pain, provided that no traction has been exerted upon the mesentery of the affected loop. If, however, the mesentery be dragged upon, the individual complains of colicky pain, similar to that experienced in the so-called intestinal colic. As a result of numerous experiments of this nature, Lennander concluded that all the viscera supplied only by the sympathetic, or by the vagus below the point of origin of its recurrent laryngeal branch, are insensitive to pain, and that the pain of visceral colic is due to the indirect effect produced upon the highly sensitive parietal peritoneum. In the case of the uterus, however, there is, in addition to the sympathetic nerve supply, a somatic supply from the third and fourth sacral nerves, so that we are not justified in ascribing the pain of uterine colic entirely to the indirect dragging effect produced upon the parietal peritoneum, although, that this may to a large extent be concerned, cannot be denied.

The cervix uteri, which is supplied largely by the sacral nerves, is, on the whole, comparatively insensitive to pain, except that produced by compression of the cervical tissues and even more, that produced by dilatation of the cervical canal. Inflammatory disease of the endometrium or of the uterus as a whole, is not usually associated with great pain, a more common complaint being of a sensation of weight and heaviness in the hypogastrium. The pain of displacements, when it exists, is probably most frequently produced indirectly by the drag of the displaced organ upon the parietal peritoneum, although the obstructive

dysmenorrhea so frequently associated with the uterine flexions is more rationally explained as a form of uterine colic, the uterine muscle endeavoring, by its colicky contractions, to expel the menstrual blood, not infrequently in such cases clotted, beyond the point of flexion. Carcinoma of the uterus is in many cases not characterized by much pain until a rather late stage of the disease, frequently not until it has passed beyond the uterus. The pain, when it does occur, is usually neuralgic in character and often of a distressingly severe type, as can well be imagined when we consider that, together with the steady advance of the disease and the increasing pressure upon large nerve trunks, there is occurring an equally steady decrease of the patient's resisting powers. Moreover, Kundrat has shown that in some cases there is an actual infiltration of the nerve trunks themselves with cancer cells.

As I have already stated, the tube and ovary, as sources of pelvic pain, are probably even more important than the uterus, and the greatest care and skill is frequently necessary for a proper interpretation of the many interesting problems presented by patients suffering from pain in the region occupied by these organs. It does not require a long experience, for instance, to be impressed with the fact, that pain in one or both iliac fossæ is far from being pathognomic of disease of either the tube or the ovary. In a general way it may be said that these two structures are, from the standpoint of their agency in the production of pelvic pain, governed by laws essentially similar.

In an excellent paper upon the so-called "ovarian pain," published in 1904, Herman considers the causes of this pain under four heads, as follows: (1) Peritoneal; (2) reflected; (3) neurasthenic; (4) hysterical, and his classification seems to have been followed by many of the later writers upon the subject and, indeed, its scope might well be extended beyond the field of the ovary, so as to embrace the subject of pelvic pain generally.

By peritoneal pain is meant, of course, that form of pain dependent upon some condition, usually inflammatory, of the peritoneum covering the organ, or, in the case of the ovary, of the so-called germinal epithelium. This is a very frequent and potent cause of pain in pelvic disease, and I believe it may be stated that much of the pain in the ordinary cases of inflammatory disease is due to the peritoneal process—the perisalpingitis or the peri-oophoritis, for instance—rather than to the lesions

of the organs themselves. This statement may be taken as a point of departure for a brief discussion of the very relevant question of the sensibility of the peritoneum, already touched upon in another connection.

As far back as 1893, Mackenzie, in his monograph upon "Some Points Bearing on the Association of Sensory Disorders and Visceral Disease," alludes to the "insensibility of the peritoneum" but he makes no distinction between the visceral and parietal layers. A far more ancient reference than this may be offered, for Meyers cites from Xenophon's *Anabasis* "that after one of the battles, Nikarchos, the Arcadian, came in flight wounded in the abdomen, holding his entrails in his hands." The same author, moreover, quotes the great Bichat as having seen dogs devouring their own intestines when they had prolapsed through an abdominal wound. It was Lennander, however, who first drew a sharp distinction between the visceral and the parietal peritoneum, demonstrating that the former is insensible to the ordinary stimuli which produce pain—cutting, pricking, burning, etc., while the latter is acutely sensitive to such stimuli. Even when the visceral peritoneum is acutely inflamed or otherwise diseased, it is said still to be insensitive to pain. Most of his conclusions Lennander arrived at by observations in the course of operations under local anesthesia, and it is only fair to state that his results have been disputed by some observers, notably by Kast and Meltzer, who assert that the apparent insensitiveness of the visceral peritoneum is due to the anesthetic effect produced by the cocaine which is used for infiltrating the line of abdominal incision, part of which finds its way into the circulation, and thus to the intestines. This objection, however, would seem to have been satisfactorily answered by Mitchell, of Washington, who reports two abdominal operations performed with no anesthetic other than normal saline solution, in which exactly the same observations concerning the sensibility of the various portions of the peritoneum were made as when cocaine had been used as an anesthetic. Other investigators have corroborated Lennander's observations, so that although the matter cannot yet be considered as absolutely settled, the weight of evidence so far is certainly in Lennander's favor.

If, then, the visceral peritoneum is devoid of sensation, and if, as Lennander further demonstrated, the viscera themselves may be cut, torn and pricked with impunity so long as the parietal peritoneum is not disturbed, we are naturally led to inquire

as to the cause of the so-called visceral pain. If, for example, the appendix is absolutely insensitive to pain, and if, even though acutely inflamed, it is possible to remove the appendix without causing pain to the individual, what is the cause of the intense pain so characteristic of acute appendicitis? In the consideration of these questions we are at once launched upon a most interesting sea, for at the very outset we are confronted with the statement, which in the light of such observations as those mentioned above, is probably correct, that there is no such thing as visceral pain, *i.e.*, pain felt in the viscera themselves. The brilliant and classical researches of Head, published in 1893, turned the attention of the profession in an attractive and interesting manner to the question of the relation of pain to visceral disease. After a long series of painstaking experiments, Head demonstrated, among other things, that the pain which is usually attributed to the viscera in the various forms of visceral disease is in reality not felt in the viscera themselves, which are insensitive, but that it is a referred pain, being felt through the sensitiveness of the spinal nerves in the abdominal wall overlying the affected viscera. He found, furthermore, in these cases of visceral disease that the pain is frequently associated with well-marked tenderness of the skin, and taking his cue from an earlier paper by Ross "On the Segmental Distribution of Sensory Disorders," he conceived the idea that these tender areas might bear some relation to the distribution of the nerves of the part. By means of an interesting series of observations and experiments, he discovered that, as a matter of fact, these areas of pain and cutaneous tenderness corresponded exactly with the distribution, not of the individual spinal nerves, but of the various segments of the spinal cord, the pain usually being present over a much smaller area than the skin tenderness, and the point or points of pain representing merely the points of maximum tenderness. In some cases pain alone is present, its location serving as a guide to the spinal segment involved in the sensory disturbance, even in the entire absence of cutaneous tenderness. So that when a patient with gastric ulcer, for instance, complains of pain over a certain area in the epigastrium, this pain is not felt at the seat of ulceration in the stomach wall itself, but is referred to the terminal spinal nerves which supply the abdominal wall over the ulcer, and which correspond to the same segment of the spinal cord as the sympathetic fibers supplying the diseased stomach wall. That the pain of gastric ulcer is a referred pain would seem to be

further indicated, as has been pointed out, by the fact that the situation of the painful area is not influenced by changes in the position or distention of the stomach, such as are produced by the ingestion of food, inflation of the organ, etc.

If these views be correct, the question naturally arises as to why the pain should be referred in this manner to the somatic sensory nerves, and to explain this Head steps into the domain of neurology. It is a fact familiar to neurologists that if a painful stimulus be applied to an insensitive portion of a nerve area, pain is felt, not at the point of application, but in the more sensitive portions of the same nerve area; thus, if the nerves of the foot, as a result of disease, are insensitive to pain, a painful stimulus applied to the foot provokes pain, not at the seat of application, but in the thigh, or perhaps in the opposite foot. This phenomenon, which neurologists speak of as *allocheiria*, Head believes is concerned in the production of the pain of visceral disease, a visceral disturbance producing pain, not in the insensitive visceral sympathetic nerves, but in the more highly sensitive terminal filaments of the spinal nerves supplying the abdominal wall and connected with the same spinal segment as the involved sympathetic nerves. In this manner, by a "trick of the brain," as it were, are produced the various forms of visceral pain. The very nature of the subject makes absolute proof of the hypothesis of Head extremely difficult, but although certain inconsistencies, some possibly real and some only apparent, will perhaps suggest themselves, there can be little doubt that most of the phenomena of visceral pain are explainable by this theory.

The application of these broad principles to the sphere of pelvic disease is evident, for if the pain of tubal or ovarian disease is a referred pain, it would seem that by a careful study of the area of pain present in any given case we might, by a process of reverse reasoning, be assisted in deciding as to which organ is at fault, inasmuch as Head succeeded in ascertaining the segments of the spinal cord which are associated with each of the important viscera. According to the table given by Head, disease of the ovary is apt to be associated with pain in the area of distribution of the tenth spinal segment, the seats of most frequent pain being, in front, a point internal to the anterior superior spine of the ilium, about two and a half inches outside and one inch below the umbilicus, and behind, a point corresponding to the tip of the twelfth rib. With tubal disease, on the other hand, the pain is apt to be referred to the areas of distribution of the

eleventh and twelfth dorsal and the first lumbar segments of the cord, the so-called "maxima" being, in front, a point in the groin just above Poupart's ligament and behind, the area over the the fifth lumbar and first sacral spines. The cutaneous tenderness which exists in many of these cases over the areas of distribution of the involved nerve segments is considered by Head even more important from a diagnostic point of view than the occurrence or location of pain, and, that in favorable cases it may be of the greatest diagnostic value is well exemplified by the three cases recently reported by Sir William Bennett. The frequent absence of this tenderness, however, together with certain misleading possibilities in its occurrence or distribution, some of which will be suggested below, make its diagnostic value in gynecological practice very limited. In a few cases I have derived some assistance, only, however, of a confirmatory nature from the symptom, but my observations are as yet so limited in number that they do not warrant me in forming an opinion.

It is a well-known fact that ovarian disease of one side may be characterized by pain either entirely or at least predominantly on the opposite side, and indeed the same thing might be said of practically any of the bilateral structures of the body. For instance, in a case of severe left-sided quinsy which I observed recently, the patient complained of sharp sticking pain in the right side of the throat only. The pain of a prolapsed ovary is not infrequently referred to the opposite side of the pelvis. Anatomically this peculiarity may be explained by the fact that there is some interchange of nerve fibers between the corresponding segments of the two sides, although just why the pain is transferred in some cases and not in others, is rather difficult to explain.

Another peculiarity in the distribution of pelvic pain is the greater frequency with which it is said to attack the left side. Most writers assert that pelvic disease is much more common in the left side of the pelvis than in the right, explaining this by the course of the left ovarian vein, the position of the rectum, etc., but it seems that, irrespective of this fact, there is still a tendency for disproportionate involvement of the left side in pelvic pain. Champruys, for instance, in a series of cases of uterine cancer, found the proportion between left-sided pain and right-sided pain to be as six to one, although there was no greater tendency to involvement of the left side in the disease. Herman, in a similar study of cases of retroversion of the uterus, found pain on the left side three times as frequently as on the right, although

there was nothing unilateral about the displacements. He ascribes the greater frequency of pain on the left side to the fact that this side, meaning, I presume, also its nervous distribution, is weaker and less resisting than the right, although this would seem to be a vague and rather unconvincing explanation.

If all cases of disease of the various pelvic viscera were associated with pain in certain definite areas, it is evident that the diagnosis of such conditions would be greatly facilitated. Unfortunately, however, the gynecological patient frequently complains of pain in portions of the body quite remote from those corresponding to the involved nerve segment, and even more unfortunately, there is a large class of patients who complain of pelvic pain, and in whom no lesion whatever can be found to explain its occurrence. When there occurs a diffusion of pain from the area primarily involved, and when we can exclude an actual extension of the disease, the explanation for the extension of the pain would seem to be in a diffusion of the pain stimuli to neighboring segments of the cord, and to permit of this extension there must have been a weakening of the nervous resistance, or perhaps an inhibition of the control of the psychic centers. Clinical experience will suggest to us several factors which might be influential in this diffusion of pain, such, for instance, as anemia, cachexia, high fevers and menstruation. As a result of anemia, for example, and the consequent anemic deterioration of the nervous system, a patient with a definite local pelvic lesion may, by extension of pain to other parts of the body, be converted into the luckless neurasthenic with whom we are all only too familiar.

The cachexia of uterine cancer, as I have already intimated, is probably just as important a factor in the increase in the severity and distribution of the pain in this condition as is the spread of the disease itself. We are, furthermore, all familiar with the hypersensitiveness of the nervous system found in febrile conditions, and the tendency in such cases for the slightest touch to be magnified into a pain or ache.

More important and germane to our topic, however, is the familiar influence of menstruation upon pelvic pain. Even under normal conditions this physiological process is associated with a general increase in the nervous sensibility of the woman, and in conditions of pelvic disease it is a matter of familiar knowledge that the hypersensitiveness of the nervous system is often acute and that the perception of pain is, with few exceptions both, mag-

nified and diffused. This, at least, would seem to be a more rational explanation of the menstrual pain of pelvic disease, than to attribute it entirely to the pelvic congestion associated with the process.

The weakening of the nervous resistance of the woman as a result of persistent attacks of pelvic pain has a practical bearing of the greatest importance, inasmuch as it frequently forms the basis of the neurasthenia which constitutes such an intractable complicating factor in many gynecological conditions. The moral to be drawn from this fact is that, if a woman be suffering with a surgical disease of the pelvic viscera which is undermining her general health, making her an invalid, and among other things weakening her nervous resistance, the indication is strong for surgical treatment, for otherwise there will be superimposed upon the clinical picture of the original disease the familiar and unpleasant picture of neurasthenia, which from a broad viewpoint, is just as truly a complication of pelvic disease as is peritonitis.

If the neurasthenia be already fully developed, it is important to remember that even though by operative interference, the original cause of the now complex clinical picture be removed, the neurasthenia may persist for a considerable time after operation, frequently giving rise to annoying symptoms which detract from the completeness of the cure. Taken as a class, probably the most marked and most distressing nervous symptoms are seen in cases of chronic pelvic disease in young women in which it may be necessary to remove both ovaries, either with or without removal of the uterus. In such cases the condition of neurasthenia to which the woman had perhaps been reduced by her long-continued pelvic disease, is frequently acutely exaggerated by the artificial menopause which is now precipitated upon her.

If the above statements be correct, it would seem fair to conclude that if operation be resorted to before very marked deterioration of the nervous system has occurred, the removal of the cause will usually be followed by a much more rapid and striking recovery, with a correspondingly rapid restoration of the nervous equilibrium. This, of course, is only one of the factors which should be weighed in the consideration of the advisability of operative treatment, and, indeed, opposed to that class of patients in whom pelvic disease results in serious general and nervous impairment, there is a very large group in which even serious pelvic conditions are associated with remarkably little discomfort or deterioration of the general physical or ner-

vous condition. All of us have probably seen cases in which serious inflammatory conditions within the pelvis have not seemed incompatible with a condition of comparative comfort and freedom from annoying symptoms. So that while the course to be pursued in any case will depend largely on the knowledge which can be obtained only through careful pelvic examination, yet in many instances the consideration of such factors as the above may be of considerable importance, and not infrequently will sway the judgment toward one method of treatment or another.

Finally, in connection with this subject of neurasthenic pain, it need scarcely be emphasized that when pelvic disease and neurasthenia coexist in the same patient, the neurasthenia is not always the result of the pelvic condition, and that, as a matter of fact, neurasthenia may exist in the entire absence of any discoverable lesion either in the pelvis or elsewhere. The latter type of cases, by no means infrequent, neurologists explain as dependent largely upon influences of heredity and environment. The hypersensitive nervous system of patients of this class, constantly "on edge," as it were, will exaggerate and distort stimuli which in the healthy woman produce no abnormal effect and thus are produced sensations of pain and tenderness, even perhaps in the complete absence of discoverable lesions. It is in this class of patients, and especially when the neurasthenia seems to focus itself upon the pelvic organs, that perplexing problems of diagnosis and treatment are frequently encountered. We are all familiar with the picture of the woman who complains, perhaps bitterly, of pain in the ovarian region, in whom on physical examination the entire genital apparatus may be found perfectly normal. It is such cases as these which were formerly spoken of as ovarian neuralgia, and which in former years were only too frequently treated by oöphorectomy. Happily, this is a custom which has become more or less obsolete, and the feminine sex is to be congratulated that the gynecologist of to-day has awakened to the fact, though perhaps by a slow process, that with few exceptions true surgery should consist in the removal of hopelessly diseased organs or parts of organs, and the conservation of healthy organs and tissues, and that to remove an ovary for no other reason than because it gives or seems to give pain to a woman who perhaps is a neurasthenic, is a procedure which has just as little to commend it as the extraction of a sound tooth because it seems to be the source of pain in trifacial neuralgia.

Scarcely less unjustifiable, but unfortunately not yet so ob-

solete, is the practice of removing ovaries which are described as "cirrhotic" or "sclero-cystic." Such changes in the ovary are quite frequent, but, while in a small proportion of cases such ovaries may perhaps cause pain, it has been shown by Herman and others that there are no anatomical criteria by which an ovary which is causing pain can be distinguished from one which is absolutely painless, and of whose existence the woman may be entirely unaware. The gynecologist, therefore, knowing that such ovaries are frequently found in perfectly healthy women, should be exceedingly circumspect in attributing pelvic pain to organs showing these changes, and never should he arrive at such a conclusion until he has subjected the patient to a careful and thorough general examination, especially from the standpoint of her nervous constitution.

The pelvic pain of hysteria, formerly confused with that of neurasthenia, has, of late years, owing to the better understanding of hysteria and its recognition as a definite disease with well-marked symptoms, been quite clearly differentiated from that of neurasthenia. In the light of our present knowledge, when a patient with no discoverable lesion of the pelvic organs complains of pelvic pain, it would be wrong to consider the pain of hysterical origin unless the patient present some of the well-known earmarks of this disease, such as the various disturbances of sensation—*anesthesia*, *analgesia*, *hyperesthesia*, *hyperalgesia*, etc. In neurasthenia the areas of pain and tenderness, though perhaps quite extensive, are, at least in clear-cut cases, definitely referable to certain segmental areas. In hysteria, on the other hand, we have to deal with a disease of the cerebral cortex, and the pain is, therefore, usually referred to certain regions of the body which might be suggested to the patient's own mind, such as the foot, the hip, the knee, etc.

The hyperesthetic patches which are seen so frequently in this disease, are especially apt to occur over the region of the ovary, although usually their hysterical origin will be suggested by the presence of other evidences of the disease.

From even this imperfect and, I fear, somewhat disconnected survey of some of the principal varieties of pelvic pain, it can be seen that the study of this subject involves much more than a mere examination into the pelvic condition, and that, in order to arrive at a true appreciation of the varied significance of pelvic pain, the gynecologist will often be led "far afield" in his search, and hence must accustom himself to extend his horizon beyond the

confines of his own limited field to a more comprehensive consideration of the patient's general make-up—physical, mental and moral. The well-known individual differences in the susceptibility to pain must always be borne in mind, for a lesion which in some patients will cause very little discomfort, may in others give rise to agonizing pain. And it is upon this influence which the "personal equation" exerts upon the severity and distribution, and hence upon the significance of pelvic pain, that I would lay a final emphasis.

In conclusion, to place before you what I consider some of the salient points of this broad question, I would state:

1. That while it is true that a careful physical examination is of the first importance in the diagnosis of pelvic disorders, yet a consideration of the character and distribution of the pelvic pain will often yield interesting and suggestive information, although the limitations of such observations from the standpoint of diagnosis are evident.

2. The good surgeon will endeavor, as far as possible, to ascertain the exact nature of the disease before resorting to operation, and will not rest content with merely deciding as to the advisability or inadvisability of operation.

3. The pain of pelvic visceral disease is in a general way governed by the same laws which apply to the causation of pain in the other abdominal viscera.

4. One of the dangers of neglect of pelvic disease, is the possibility of the development of a condition of neurasthenia, with a diffusion of pain to other parts of the body, and the appearance of other more or less characteristic symptoms of this condition.

5. One of the reasons for the continuance of unpleasant symptoms after operative treatment of pelvic lesions, is the persistence of the neurasthenia which is frequently a complicating factor in such cases.

6. Hysteria as it manifests itself by pelvic symptoms presents the same characteristics which distinguish it as it appears in other parts of the body.

7. The removal of normal ovaries for conditions of pelvic pain is founded upon an erroneous and obsolete conception of the mechanism of such pain, and modern surgery has condemned such a procedure as unjustifiable from a theoretical point of view, and useless from the standpoint of clinical experience.

8. The so-called fibro-cystic ovaries are frequently found in

women who enjoy perfect health, and hence great caution is necessary in attributing pelvic pain to such organs. If operative treatment be resorted to at all, it should be conservative rather than radical.

9. The gynecologist must learn to look upon pain as the resultant of two factors, the lesion and the patient, and in order to arrive at an intelligent appreciation of the true significance of pelvic pain, he must study both these factors with equal fidelity.

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THE DIAGNOSIS OF NONPUERPERAL PELVIC INFECTIONS.

PART OF A SYMPOSIUM ON NONPUERPERAL PELVIC INFECTIONS.*

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ALL Fallopian tube inflammations are caused by an infection, which is usually conveyed into the tube from the uterine cavity, seldom from the peritoneal cavity. Tubercular infection is about the only exception.

When the microorganisms have implanted themselves on the numerous folds of the tubal lumen, they soon cause a reactionary inflammation, which extends through the entire thickness of the tube. It is seldom possible to differentiate a puerperal from a nonpuerperal infection without also considering the history of the case, which may disclose to us the etiological factors. Frequently both types of infection act together to cause the tubal inflammation.

I premise my remarks on the diagnosis of diseases of the Fallopian tubes with the statement that it is impossible always to palpate the tubes. I know that this assertion is at seeming variance with the teachings of most text-books, but I believe that the authors would undoubtedly admit its correctness. They do not allude to the subject in their writings, thus conveying an erroneous impression, and leading some readers to believe that the adnexa can always be felt. After an experience with thousands of carefully conducted bimanual examinations, I am convinced that normal Fallopian tubes cannot be palpated, unless the local conditions are favorable. Corpulence and rigidity of the abdominal walls are always an obstacle to exact palpation, unless an anesthetic has been administered; and even then, we are frequently unable to palpate them. The same not infrequently holds good also for diseased conditions of the adnexa.

In the course of time one learns many little technical manipulations that aid in making a correct diagnosis. For instance, the

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patient, being on an examining table, the examiner may place his foot on a stool and then rest the arm of the hand with which he examines against his knee. In this way the hand is steadied and the examining finger may be introduced from a quarter to a half inch farther into the canal. When palpating, the examining hand should very seldom be held in the position invariably depicted in text-books. This position does not give one quite so long a reach, and the patient is hurt more or less with the knuckles as they press against the soft parts in the effort to get a longer reach with the examining finger. Neither of these objections holds good when the fingers that are not used in the vagina are placed in the nateal fold. About the only time that one needs to hold his hand in the "inherited" manner, is when he wishes to palpate the vesical ends of the ureters. Whenever the local conditions are such as to make it consistent to examine with two fingers *per vaginam*, this should be preferred.

Frequently, it is of advantage to separate the distal parts of the examining fingers, so that the middle finger terminus is behind the index finger terminus; and then to push the pelvic contents upward toward the external hand, so that the vaginal portion of the cervix is held between the two vaginal fingers. There are a number of seemingly slight variations in technic which are useful.

The palpation of the uterine adnexa should be begun at the uterine end, which is usually of more solid consistency. Each respective adnexum can then be traced toward the fimbrial termination.

It is not possible to map out the outlines of acutely inflamed tubes without resorting to an anesthetic, because of the extreme sensitiveness of the tubes and the coexisting local peritonitis. As a rule we can palpate only an indefinite swelling in the location of the tubes. We must wait until the acuteness of the attack has passed away, before we can trace more definite outlines.

In the mildest form of tubal inflammation—catarrhal salpingitis—the palpable changes of the tube are so slight that they can seldom be appreciated—for instance, a slight increase in the diameter, but no detectible change in the consistency. The only difference that can be positively determined on, between a normal Fallopian tube and one affected with catarrhal inflammation, is that the latter is sensitive to touch when palpated.

When, however, the tubes are in a condition of interstitial purulent inflammation, the uterine end can be felt to be of larger

diameter than the normal, and of firmer consistency. We have not infrequently, under such circumstances, been able to palpate distinctly small nodules on the uterine end of the tube, and even, in isolated instances of women with thin and flaccid abdominal walls, nodules over the uterine cornua; which nodules were in the interstitial parts of the tubes.

From the uterine end the palpation should proceed toward the abdominal end, where it may be ascertained that the tube increases in diameter. Frequently its tortuousness can be felt, and its hardness determined; adhesions also can be detected when present, as is usually the case. The sensitiveness to touch depends on the degree or acuteness of the inflammatory process. While one can seldom palpate the interior or concave side of the tube, the convexity is frequently quite distinctly palpable. The ovaries are seldom separately palpable in the interstitial purulent form of salpingitis, whereas in the catarrhal variety they can usually be felt separately.

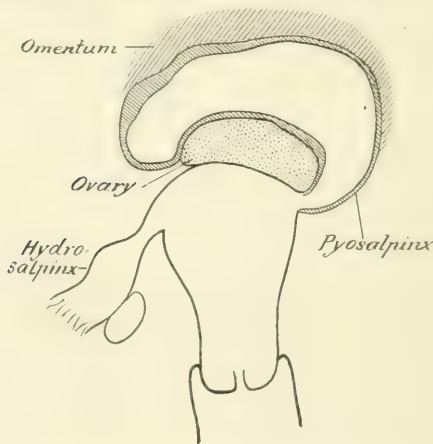
I have said that we should always begin palpation at the uterine end of the tube; while this should be the usual procedure, it is frequently impossible when we have a posterior uterine displacement. Occasionally, however, it may be done even then, by pushing the pelvic organs upward toward the external hand. Sometimes, also, when the bimanual method fails to establish a diagnosis, we may succeed by resorting to the recto-vagino-abdominal method. In fact, this triple method of examination should never be lost sight of in gynecologic affections, since we can frequently make the diagnosis by its help, when we have failed with other means.

Hydrosalpinges are undoubtedly always of secondary formation. Whether the primary inflammation caused a catarrhal or a purulent salpingitis depends on the quality of the infection. I have more than once had the opportunity of keeping patients with acute gonorrheal salpingitis under observation for several years, and of determining, in the respective cases, that the final outcome was a hydrosalpinx. For the formation of a hydrosalpinx, the inflammatory process must have occluded the abdominal end of the tube. This usually being also the most dependent part of the tube, the fluid contents accumulate in that part and give the tube somewhat the shape of a savage war-club. I have demonstrated before this Society exceedingly tortuous hydrosalpinges with formation of folds in the lumen, thus showing compartments in the adnexum. Sometimes, when

the tubal lumen is occluded, the resulting distention may be globular, and of such size as to appear like an ovarian cyst—as, for instance, in the specimen presented by me this evening, and in that given by me to Dr. W. Gill Wylie and depicted in the *American System of Gynecology* (Fig. 311, p. 923); in the latter instance neither Sims, Wylie, nor I made a correct diagnosis.

Sometimes the tubal tumors may develop within the ligaments, and in two cases that I operated upon, the tumors had assumed such dimensions, and the palpatory findings were such, that I mistook them for intraligamentous ovarian cysts.

The mesosalpinx has considerable bearing upon the outline of a hydrosalpinx. The mesosalpinx is shorter than a distended



tube, and therefore causes more or less tortuousness of the tube, most marked in the median part.

The abdominal two-thirds of a tubal tumor may be located anywhere within the pelvis—as, for instance, in a specimen (uterus with adnexa) shown by me about eighteen months ago, in which one adnexam had become dislocated upward and was firmly adherent to the summit of the fundus. In some cases the distended tube is in the vesico-uterine pouch. The most usual position, however, is in the cul-de-sac of Douglas, a little to one side of the median line. The position of the extreme uterine end, of course, cannot change, and that is why it is

so important always to begin palpation at that point. Intraligamentous tubal tumors are necessarily always in close proximity with the lateral border of the uterine body. They usually distend the upper part of the broad ligament, and thus, when large, bulge into the abdominal cavity; yet I have seen one instance in which the tube bored itself downward into the parametrium.

The mobility of a tubal tumor depends upon the extent and firmness of existing pelveo-peritonitic adhesions. Such adhesions are almost invariably present, although they may possibly have become absorbed, as is frequently the case in intestinal adhesions in diffuse or local peritonitis. Retention cysts of the tube may be freely movable, if there are no adhesions.

Hydrosalpinges are seldom very sensitive upon bimanual examination; when much pain is caused by examination, this is due to existing local peritonitis. The consistency of a hydrosalpinx is elastic, the elasticity depending upon the degree of distention of the tubal lumen. In most instances, if the hydrosalpinx is not too small, this elasticity is readily recognized on bimanual examination. The exception occurs when there is much inflammatory exudate, or if there are many intestinal adhesions. Under very favorable circumstances, it may be possible to palpate the bands which frequently divide a hydrosalpinx *quasi* into compartments.

A large hydrosalpinx may be mistaken for an ovarian cyst—a not infrequent error, especially if the evolution of the hydrosalpinx is intraligamentous. If the local conditions are sufficiently favorable, so that we can palpate the Fallopian tube, the differential diagnosis is not difficult; because in ovarian cysts the entire tube may be palpated as normal, whereas in tubal tumors only the uterine end is appreciable (usually somewhat indurated), and on following it laterally we find it merging with the distended part of the tube. The difficulties are materially increased in differentiating between an intraligamentous large hydrosalpinx and a parovarian tumor. In the few instances in which, under such circumstances, I correctly diagnosed the tumor as hydrosalpinx, I ventured the diagnosis because the tumor formation was bilateral, although much larger on one side than the other, and, because, furthermore, there was a history of occasional attacks of pelvic peritonitis, and a suspicion of gonorrheal infection a number of years before the patients consulted me.

Pyosalpinges do not often attain so large dimensions as hydrosalpinges sometimes do, although Cleveland, Broun, and I have shown in this Society pyosalpinges as large as any hydrosalpinx I have ever seen; but these were rare exceptions. The smaller size of the pyosalpinx is probably due to the fact that pus is not generally produced in such large quantity, and perhaps also because the walls of a pyosalpinx are more resistant to distention. If the distention is sufficient in hydrosalpinx and in pyosalpinx to make the tubal tumor readily palpable, the examining finger will easily distinguish the doughy feeling of the pyosalpinx from the elastic sensation imparted by a hydrosalpinx—like, for instance, that of a rubber condom distended with water. Pyosalpinges are seldom mobile, and in nearly all instances are complicated by more or less pelveo-peritonitic exudate, which is readily accessible to palpation unless the inflammatory process be acute. In hydrosalpingeal adhesions, the local inflammatory process frequently causes no pain when a bimanual examination is made, whereas pain is usually marked in pyosalpingeal adhesions. Frequently we meet with pyosalpinges which are of intraligamentous evolution; they lose all characteristic tubal form, because of their envelopment by the indurated folds of the broad ligament. We can then only determine upon a hard globular mass close to the side of the uterus, which is more or less sensitive to pressure, even when the pathological process is of long standing.

In the event of extensive pelveo-peritonitis, all the organs in the pelvis may become so matted together that it is impossible to make a differential palpation.

The diagnosis of a pyosalpinx is not difficult if the normal configuration is retained and if the patient's abdominal parietes are relaxed. If one raises the uterus with the vaginal examining finger toward the abdominal parietes, and keeps close to the uterine cornu of the side to be examined, and then palpates the adnexum, moving the external hand over the examining fingers, from the back forward and *vice versa*, one can usually detect the infiltrated uterine end of the tube. The retention tumor can then generally be traced, merging with the infiltrated uterine end of the tube. Furthermore, pyosalpinges are usually bilateral, although the topography on the two sides may differ. It is not rare to find a pyosalpinx on one side and a hydrosalpinx or a catarrhal salpingitis on the other. I have never found a perfectly normal tube, however, opposite to a well-marked purulent salpingitis.

A pyosalpinx may sometimes simulate a tubal pregnancy to such an extent that, in exceptional instances, I know of no differential features certain to preclude error. Especially is this the case in some instances of tubal abortion, in which the active process has become quieted, but the blood in the tube (tubal mole) has not been absorbed. There is in such cases still an inflammatory reaction process surrounding the tube. The chief points for differentiation are found in the somewhat firmer consistency of the tubal mole, and in the less marked local inflammatory changes—except in those instances in which suppuration has begun in the gestation adnexum. Furthermore, where a faulty conception is the cause of the pathological pelvic condition, the ailment is unilateral, whereas in purulent salpingitis it is usually bilateral. We should not leave out of consideration the fact, however, that the chief etiological factor for the occurrence of tubal pregnancy is tubal inflammation, and that we may therefore have pyosalpinx on one side and tubal gestation on the other. If one is careful in eliciting the history from his patients, it will aid him very much in coming to a conclusion, and in making a correct diagnosis. There is also a difference in the palpatory findings of the two sides, the adnexum tumor of the impregnated side being larger and more painful on examination. A preexisting tubal inflammation increases the liability of the tubal mole to infection, and also causes the likelihood of intestinal adhesions on that side. My meaning is best made clear by citing an example:

A woman thirty-five years old had had her last child six years previously. She had been treated by her physician for tubal inflammation for eighteen months. Then she missed her period. This was followed six weeks later by atypical bleeding and cramps in the lower abdomen, most marked in the right iliac region. There was also pain in the left iliac region. It was thought by her attendant that she had had an incomplete abortion. Bimanual examination revealed a swelling on the right side—approximately six centimeters in diameter—smooth and even at the base, and somewhat irregular at its summit. At the base there was a sensation of moderate elasticity, which seemed to exist deep, in the center of the mass. The uterus was similar in size and consistency to a uterus in a condition of chronic inflammation. Moving the vaginal portion of the cervix forward caused intense pain. On the left side also there was an inflammatory tumor, lying quite close to the uterine cornu; the

uterine end of the tube was felt to be much thickened and was merged into the mass. The pain on pressure, during the bimanual examination, was not nearly so marked as on the right side. The appendix region was also markedly painful to pressure, and a deep resistance on pressure was appreciable. The pelvic organs were firmly fixed by inflammatory exudates. From the history, taken in connection with the local findings, the diagnosis was of a tubal mole as the consequence of an old tubal abortion, with a small hematocele, on one side; and a purulent salpingitis on the other side, with pelveo-peritonitis, intestinal adhesions, and chronic appendicitis. Leukocytosis varied from 14,000 to 15,000, showing quite plainly that the suppurative process was not acute. On operation, after separation of the intestinal adhesions, it was found that the mass which gave the sensation of deep elasticity, and which was adherent behind the uterus to the posterior surface of the broad ligament, and to the pelvic floor, and which ruptured during enucleation, was an encapsulated hematocele, containing some very dark, almost black, fluid blood, with a few small clots. The Fallopian tube contained a clot of blood beginning to undergo purulent changes. The opposite side was a distinct pyosalpinx of medium size. The appendix was large, inflamed, and adherent.

When an appendicitis calls for differentiation from a right-side salpingitis, we must rely chiefly upon the objective symptoms, because the subjective symptoms are frequently similar. If one palpates a diseased tube and finds that pressure upon it causes an increase in the pain of which the patient complained, but can find no marked sensitiveness over the appendix region, and no induration or marked resistance to that locality, appendicular affection may be excluded. Very likely, too, on the left side also evidence of salpingitis will be found, but perhaps of such mild degree as to be over-shadowed by the symptoms arising from the right tubal inflammation, so that the patient did not volunteer any complaint about the left side condition.

If, however, in addition to the objective symptoms described for salpingitis in one of its forms, marked sensitiveness is found, and perhaps also the evidence of an exudate in the iliac fossa; or if, under favorable circumstances, an enlarged appendix may be palpated, the diagnosis of a coëxisting appendicitis may be made with certainty.

An interstitial purulent salpingitis with greatly hypertrophied walls, which has become displaced and then become intimately

adherent to some part of the uterine corpus, may be mistaken for a small subperitoneal fibroid. A fibroid tumor of small size very seldom causes symptoms, however, and upon examination is painless, while the blood conditions remain normal. The purulent tubal affection in most instances causes symptoms and is more or less painful upon manipulation. In addition, a greater or less degree of leukocytosis is present, usually from 14,000 upward. Furthermore, if the abdominal walls are not corpulent and if they are thoroughly relaxed, it is always possible to palpate the other inflamed adnexum.

The predominating pelvic exudate of puerperal origin is parametritic; whereas that of nonpuerperal origin is pelveo-peritonitic. I have never seen a nonpuerperal infection cause a parametritic exudate, although both forms may be combined in a mixed puerperal infection. We must look to the endometrium and the Fallopian tubes as the carriers of pelvic infection. In the acute stages of inflammation, bimanual palpation should be entirely avoided; or, if resorted to, it must be conducted with such gentleness and care that it is absolutely useless for differentiating or separately palpating the pelvic organs. All that the finger can determine under such circumstances is that an indefinite exudate fills the pelvis; to go further would cause trauma that would jeopardize the patient through a spreading of the inflammatory process. After the passing off of the acuteness of the attack, the adnexa may be more or less distinctly located.

It is always important to elicit a detailed history of any pelvic infection (such as gonorrhea), or of traumatism from local treatment, or a minor surgical intervention. An old gonorrheal infection is usually the primary cause, and the traumatism from local treatment or from a minor surgical intervention is the immediate cause of the pelvic inflammation. It is therefore obvious how important it is to analyze the history, to determine upon an exact diagnosis as to the cause; because, so far as the objective symptoms are concerned, there is no difference in the variety of infection, except in some instances of tuberculous infection. Four-fifths of all pelvic infections are of nonpuerperal origin.

In suspecting a pelvic infection to be of tuberculous character, it is well to look for tubercular lesions in other parts of the body. A tubercular salpingitis is not likely to cause so much local disturbance as does one of gonorrheal origin. Moreover, if we palpate a tubercular tube before it has become much distended, it imparts to the examining finger a firmer consistency,

and the uterine end is apt to be more or less nodular. If ascites is present, we are sure that the condition cannot be due to a puerperal or a gonorrheal infection, and it remains for us to determine whether there is a primary malignant neoplasm of the tube, which is of unusually rare occurrence.

If, in any case, we find in the secretions, either of the uterus, the cervical canal, the urethra, or the external genitals, a specific microorganism on microscopical examination, the diagnosis is likely to be at once cleared, unless, as may happen, tuberculosis and gonorrhea are coëxistent. This I have seen twice, and in both instances I was mistaken in my diagnosis, from not recognizing the existence of the tuberculous process. The injection of tuberculin would probably have cleared the diagnosis, and may be recommended in all doubtful cases.

39 EAST SIXTY-FIRST STREET.

ETIOLOGY OF ACUTE NONPUERPERAL PELVIC INFECTION.*

BY

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ACUTE septic infections of the pelvic serous membrane are usually secondary to a septic inflammation of the uterus, tube or ovary, from extraneous agencies. In considering the etiology, we naturally turn to these organs as the original site of the lesion. A knowledge of the causative factors of uterine and tubal infections but paves the way for a clearer understanding of the resultant pelvic inflammation. Thus it is axiomatic that the etiology of the one is the etiology of the other, and there is presented a broad field for discussion. The accidental infections of the pelvic peritoneum from lapses in surgical technic, or from tubercular infection which is a chronic process, or from a traumatic peritonitis will not be considered; nor such conditions as acute pelvic peritonitis from necrotic fibroids, twisted ovarian pedicle, ruptured dermoids, malignant growths, punctured uteri during curettage, the exanthemata, or pelvic abscess from an intestinal infection of a ruptured ectopic. For in these exceptions, owing to their relative

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infrequency, it is the main disease and not the accompanying pelvic infection which concerns the operator. Attention is therefore directed to the main bacteriological factors, viz., the gonococcus of Neisser, the streptococcus and staphylococcus and the bacillus coli communis; also to the avenues of infection and to a few anatomical relations bearing on the extension of the infecting agencies.

In general, we have two classes of bacteria, the cocci, small, round spherical cells, and the bacilli or rods. In the former are gonococci, streptococci and staphylococci; and in the latter, the bacillus coli communis. There are a number of other germs but their part in the production of acute pelvic infection is so uncommon as to have little practical significance either from a clinical or a bacteriological standpoint.

The gonococcus of Neisser is pre-eminently a surface germ, invading the genital tract by continuity of structure and negativing the acid secreting germ of Döderlein. Its presence is usually due to ejaculated semen. It has little tendency to permeate the lymphatics and seldom produces systemic poisoning. Whatever inflammatory reaction is present is due more to excreted toxins than to the presence of the germ itself. Association with a mixed infection adds to its virulence, but it has been found in pure culture in the tubes and peritoneal cavity. It is without exception regarded as the chief infecting agency of tubal disease and was first brought to our attention as a causative factor of pelvic disease by the classical brochure of Noeggerath in 1877. The gonococcus invades the peritoneal cavity by continuity of structure through similar structures, rarely by blood or lymph channels, though it has been demonstrated in the blood, endocardium, pleura and peritoneum. In short, the gonococcus travels by the mucosa.

The other important coccic infections are those of the streptococci and staphylococci, of which the staphylococcus pyogenes aureus is the most common. These germs never originate de novo nor are they idiopathic, but their natural habitat is cutaneous surfaces, mucous membranes and dirt under the fingernails. They invade usually by the lymphatics, therefore the surrounding structures are more densely and earlier involved than in gonorrheal infection. They infect more quickly, and with more virulency, and can be regarded as a result of faulty aseptic technic.

The bacillus coli communis is the chief organism inhabiting the

large intestine, resembling closely the typhoid, and associated with many inflammatory conditions found with intestinal lesions. It can and does migrate from the intestine and appendix and attack the adnexa, proof of this being that this germ has been isolated from pus in tubal and ovarian abscesses.

A complete understanding of the etiology of acute pelvic infection is difficult as the entire genital tract demands attention because it is the habitat of other bacteria which are normal to that situation and also nonpathogenic. Döderlein isolated a vaginal bacillus, with acid excreting properties which he thought preserved natural vaginal acidity and inhibited the growth of pathogenic organisms. Kronig has described other nonpathogenic germs in the vagina, while Stroganoff noticed that during menstruation, vaginal microorganisms increased in abundance. The uterine canal and the tubes are bacteria free in health. It is conceded that though these nonpathogenic bacteria in the vagina or around the vulva and vestibule are innocuous in those localities, if introduced beyond the os externum by any agency, they become pathogenic. Whitridge Williams has elucidated this theory more in detail. So we can positively assert that any organisms found in the uterus or tubes come from without, and that as a direct result there may supervene a uterine or tubal inflammation, the starting point of an acute pelvic peritonitis or cellulitis.

Turning now to a few anatomical considerations, it is important to note the reflection of the peritoneum covering the uterus, bladder, tubes and ovaries, and its extension outwards to form the broad ligaments, which divide the pelvis into halves. It is the posterior half containing the free ends of the tubes and Douglas' cul-de-sac which engages our attention as we recognize the important part which each one of these halves plays in acute pelvic disease. The relation of the cellular tissue of the pelvis is also of interest. It lies under the peritoneum, united closely to the uterus, quite marked in the broad ligaments, and contains important vessels, nerves and especially the lymphatics, which occupy so important a rôle in pelvic infection. This cellular tissue spreads from the uterus as a center and radiates in all directions, each part reaching the pelvic wall. Dr. Thomas Addis Emmet was wont to describe it as a trellis or arbor which acted as a support for the vines, viz.: the vessels, nerves and lymphatics. As the lesion from which the infection spreads is often situated on one side of the mesial line entirely in the right

or left lymphatic system, it follows that the resulting spreading infection is frequently unilateral, and as a sequel the right or left pelvic cavity is involved in this manner. In considering etiology of pelvic infection, we must further take into account the anatomy of the tube and its relation to the peritoneal cavity. The mucous membrane of the tube is continuous with that of the uterus. Two-thirds of the tube's circumference only is invested with peritoneum; the other third, lying between the folds of the broad ligament, is directly contiguous with the cellular tissue before mentioned, and its lymphatics anastomose directly with those of the uterus and cervix. The open or fimbriated extremity communicates directly with the peritoneal cavity, each end lying in Douglas' pouch. Thus we see that any uterine septic condition may extend to the tube, thence to the peritoneum through escape of infected tubal products, producing a localized septic peritonitis; or it may invade the cellular tissue of the broad ligament through the lymphatics and produce a cellulitis.

Acute pelvic peritonitis is usually symptomatic and secondary to some existing disease, occurring more frequently than cellulitis, and generally septic. Pelvic cellulitis is primary, always septic, and spreads directly from the cervix or uterus body to the pelvic cellular tissue from some injury or abrasion in the genital tract. It is usually obstetrical, never gonorrheal. Roberts states that there is no involvement of the tube in cellulitis, a statement to which I cannot assent. He explains the infection from the body of the uterus as follows: The inflammation is directly transmitted through the uterine tissue by the lymphatics to the cellular tissue of the broad ligament, then to the lateral walls of the pelvis, or forwards beneath the anterior layer of the broad ligament to the subperitoneal tissue of the anterior abdominal wall; or having reached the lateral wall of the pelvis, the inflammation may travel to the psoas, and thence to the kidney. But it is more commonly downwards and forwards to the anterior abdominal wall, to Poupart's ligament and the bladder. If it spreads from the cervix the cellular tissue around the cervix is first affected, then the base of the broad ligament to the wall of the pelvis from the vesico-uterine tissue in front or the utero-sacral ligaments behind. In direct contrast, the extension in pelvic peritonitis is usually direct through continuity of structure and not by lymphatics and cellular tissue.

Returning to the specific agencies at fault, the gonococcus

claims our attention. But scant interest attached to this germ as a factor in the production of pyosalpinx till Noeggerath's monograph, in 1877. Even then he was unaware of a specific germ as the gonococcus was not discovered till 1879 by Neisser. Further, Neisser's germ could not be differentiated from other cocci till Gram evolved his method. Acute gonorrheal peritonitis is very rare, while a gonorrheal cellulitis is still more so. The former is usually the result of a mixed infection. Although we are confident that the gonococcus can cause a pelvic infection, to demonstrate this scientifically is no easy task. Kelly and Guy Hunner reported a series of cases of true gonorrheal peritonitis, the evidence founded on positive microscopical findings.

Wertheim believes the gonococcus the most common cause of pyosalpinx, yet curiously enough bacteriological examinations of tubes affected with a chronic or a suppurative salpingitis rarely demonstrate its presence. The claim has been made that 20 per cent. of ablated tubes shows its presence but its absence is not proof that it should be excluded as a cause. For it is a well-known fact that germs can perish in their own secretions if pent up. As the fimbriated ends of the tube are usually sealed by the localized peritonitis with which Nature protects the general peritoneal cavity, the gonococcus finds itself in an uncongenial soil and prevented from migrating. It therefore starves to death. Besides, the gonococcus is short-lived and to insure its perpetuation must have a suitable culture medium. So in the tube it dies in from six to eight weeks, a fair period of life, but it thrives in the vagina, urethra, utricular glands and cervix.

As the origin of a gonorrheal peritonitis is usually from without and by extension from leaky tubes, statistics on gonorrheal pyosalpinx bear on the question of etiology.

In 312 cases of Noeggerath and Wertheim, 83 had living organisms of which 56 were gonococci, 11 streptococci, and 6 staphylococci; 122 of these were sterile. It is these sterile tubes, when ruptured during ablation and bathing the pelvic viscera with pus, which produce no postoperative peritonitis. This apparent immunity has caused some operators to be careless during enucleation of a pyosalpinx and to surround themselves, falsely, with a feeling of safety when they assert all ruptured tubes are innocuous.

Guthrie collected statistics from fifteen different operators in Iowa in which 70 per cent. of ablated tubes proved to be gonorrheal.

Neisser, in 143 cases, found the gonococci in 80, after a latent period of from two months to eight years. He affirms that the invasion of the peritoneal cavity was usually by the uterus, to the tube and thence to the peritoneum. Menge examined the secretions and tissues of 122 tubes in purulent salpingitis and by numerous cultivation experiments found 75 bacteria free. Of the remaining 47, 28 had gonococci, 9 tubercle, 1 staphylococcus, 1 colon bacillus, and 1 an anaërobic diplococcus. In the clinic of Martin, 2,098 cases of purulent salpingitis were examined bacteriologically, of which 279 were gonorrheal, 374 puerperal, 19 tubercular, and 13 syphilitic. Of this number 1,282 had a prior catarrhal salpingitis. In 376 cases collected by six other observers, 76 showed pure gonococcus, 10 mixed infection, 15 streptococcus and staphylococcus, 7 pneumococcus, 3 colon bacillus, and 215 were sterile.

With these figures and facts in mind it is interesting to note the views of other workers in this field. Treves says "inasmuch as the gonococcus cannot survive in the peritoneal cavity, it is doubtful whether peritonitis due to the gonococcus alone has any existence." Senn thinks that the gonococcus cannot establish a peritonitis like the streptococci. Rathin, however, claims the gonococcus is the most frequent cause of local peritonitis, and Winkle also believes that the peritoneum can be and is liable to gonorrheal inflammations. Crowell, too, thinks this germ the source of most pelvic inflammations and pyosalpinx.

Usually a gonorrheal pyosalpinx ends with a localized peritonitis which may extend without any warning if the poison is very virulent or escapes too rapidly. A peritonitis resulting from a gonorrheal pyosalpinx is usually due to a mixed infection. With true gonorrheal pyosalpinx, relapses are not so common as in streptococcic infection due to the early death of the germ, and the consequent inhibiting of fresh invasions.

We recognize the preponderance of tubal gonorrheal infection and the possibility of acute pelvic infection following, yet we turn to the streptococcus and staphylococcus as other important etiological agents. The peritonitis following such infection is bacteriologically identical with that of the endometrium and tubes as opposed to the lymphatic infection of cellulitis, which is not so diffuse but confined to certain fascial strata. In streptococcic or staphylococcic cellulitis the germ enters by lymphatics, a thrombus, the blood current or directly through the genital tract between the folds of the broad ligament; producing

infiltrated areas with a marked tendency to suppurate at various focal points. Suppurating pelvic cellulitis is the origin of true pelvic abscess.

The tenure of life of these germs in an infected tube is remarkable. Miller, of Johns Hopkins, reports a case in which "cultures were made from germs that had apparently survived the initial infection over twelve years, and another case in which a fatal peritonitis induced by them had followed after an operation two years after subsidence of active manifestation of the disease." A streptococcic tube, owing to the tenacity of life of the germ, retains its virulence for a long period, so that any irritation, violence, excess or injury may induce an oft-recurring acute exacerbation, and the infection can come from the bowel, bladder or uterus. The cause of a streptococcic or staphylococcic tube, nonpuerperal, usually results from a curettage, passage of an unclean sound, lapses in aseptic technic, or introduction of tents. Two cases I saw were the result of stem pessaries. As a rule, the infection travels directly to the peritoneum.

The bacillus coli communis plays a relatively important part in the production of an acute pelvic infection. It can migrate from an intestinal ulcer and infect an acute oöphoritis, causing ovarian abscess with resultant peritonitis. Reed believes that in a small percentage of cases this happens, but only when the gut is adherent. Suppuration of ovarian cysts with twisted pedicles and the concomitant peritonitis is explained in this way. The plastic matter forming adhesions is also liable to attack by the bacillus coli communis, which causes these adhesions to break down into pus. Of late years the relation of the appendix to right tubal disease has occasioned more than passing interest to the gynecologist, and here also the colon bacillus is the active agent. If we recall the relation of the ovary and tube to the appendix through Clado's or the appendiculo-ovarian ligament, so prominently described in Deaver's surgical anatomy, we can more easily understand how the one can infect the other. This ligament is a prolongation of the meso-appendix into the broad ligament, and there probably exists a distinct lymphatic connection between the appendix and the right ovary. Deaver believes that this ligament can be regarded as a causative factor in right tubal trouble following appendicitis. Krusser says the appendix is involved in 15 per cent. of tubo-ovarian disease and Martin found appendicitis complicating 13 cases out of 276, Ochsner 15 in 51. Battle and Cornier believe that the exact inter-relation between

appendicitis and salpingitis is incompletely understood, but they are agreed that appendicitis may be regarded as a primary source of salpingitis in many instances. This usually means an acute pelvic infection. It is no uncommon finding in a section to note the tube and appendix matted together with adhesions, and evidences everywhere in that region of unlimited possibilities of acute peritonitis. My own experience has been sufficient to convince me of the possibility of the appendix as a causal factor in the production of acute pelvic peritonitis, several interesting cases having been noted. Schmitt says that an appendix may be attached to a diseased adnexum causing a peri-salpingitis, and that a chronic appendicitis may produce pelveo-peritonitis. Van Doren Young reports a case of appendicitis causing a pelvic peritonitis and eliminated the uterine canal as the source of infection. Fowler in his classic on appendicitis says that the appendiculo-ovarian ligament of Clado furnished a route of bacterial migration from the intestine to the right ovary, and that Kiefer has demonstrated the presence of the colon bacillus in ovarian abscesses, with inflammatory conditions present in that locality. Fowler further remarks that "the focal lesion in many such cases existed in the appendix."

Thus it is easily apparent from the foregoing data that acute pelvic infection is rarely primary but more often a sequel of uterine and tubal disease. It is for this reason that so much consideration has been given to the etiology of endometritic and adnexal lesions because of their direct bearing on the subject in question. If we did not know tubal anatomy, and that of the pelvic cellular tissue, we could scarcely comprehend acute pelvic peritonitis which is but an extension of the original disease. Watkins tritely sums up when he says that nearly all pelvic infections occur through the vaginal canal; a very few of them reach the pelvis through the general circulation, and a very limited number are the result of migration of bacteria through the intestinal wall. The infection generally results from carelessness in the preparation of hands, from neglect to properly sterilize instruments, or from the improper preparation of the field of operation.

No attempt has been made in this paper to advance new views. It is simply a résumé of present-day theories and ideas. The pathology and etiology of acute pelvic infection has advanced but little in late years, in strong contrast to our improved operative technic. We may perhaps stand on the threshold

of some new scientific discovery, but as yet the subject is "in statu quo."

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126 JORALEMON STREET.

THE TREATMENT OF NONPUERPERAL INFECTIONS OF THE PELVIS.

BY

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IN order to obtain a comprehensive idea of the treatment of infection of the female pelvis it may be well to consider briefly its anatomical composition. For practical purposes the pelvis may be divided into two general divisions, (1) the pelvis proper, with its coverings of skin, muscle, nerve, lymphatics, blood-vessels, cellular tissue and peritoneum, and (2) the organs of the pelvis, all of which, except the ovaries, may be regarded as a portion of the external surface of the body, that is, the genital, the urinary and that part of the intestinal tract consisting of cecum, appendix, sigmoid, rectum and small intestines.

Infection, and by that is understood bacterial infection, may either originate from the entrance of organisms at a point of least resistance in either of these two general portions of the pelvis, or it may extend by contiguity from other parts of the abdominal contents, or disease may be conveyed through the general circulation from some distant seat of infection. That the female pelvis suffers to a greater extent from bacterial invasion than the male is due in a great measure to the fact that there is a greater area of surface exposed to outside influences, largely through the arrangement of the genital tract, and especially by the direct connection through the Fallopian tubes of the pelvis with outside contamination. Disease of the pelvis by extension of bacteria through the general circulation from distant sources

of infection is uncommon. Invasion by contiguity, though more frequent, includes but a small percentage of pelvic infections, so that the very large number of cases of inflammation may be said to be due to the primary introduction of bacteria by means of invasion at points of least resistance in either the pelvic wall or the organs which fill the pelvis, the ovaries excepted, the infection traveling along lymph or blood-vessel or by direct invasion through bacterial extension along the Fallopian tubes. The close association of the organs of the pelvis to each other and to the pelvis proper generally results in disease of one organ, involving the others more or less completely, either by direct extension or through blood or lymph channels.

The mode of entrance of bacteria in attacking the pelvis is dependent largely upon their kind. In their order of frequency have been found the gonococcus, streptococcus, staphylococcus aureus and albus, bacterium coli, micrococcus lanceolatus, bacterium lactis aërogenes, proteus zenkeri and the bacillus of tuberculosis. Of these bacteria it is known that the gonococcus invades by direct extension along the mucous membrane of the genital tract to the peritoneum of the pelvis; the streptococcus and staphylococcus more commonly by the lymphatics and blood-vessels of the broad ligaments, but sometimes along the mucous membrane; the bacillus coli, putrefactive bacilli and streptococci, either primarily or secondarily through the intestinal tract, especially from appendicular or rectal infection. The tubercle bacillus is found generally secondary to abdominal tubercular peritonitis. Hence the treatment of pelvic conditions must depend, in a great measure, upon (1) the variety of bacteria, (2) their mode and site of entrance, (3) the region and organs involved. The very large percentage of infections being due to the invasions of the streptococcus or staphylococcus pyogenes and the gonococcus, special attention will be given to the treatment of these conditions.

If the infections of the pelvis during the puerperium or following abortion be eliminated, inflammations due to the pyogenic organisms are caused almost entirely by the use of uncleanly instruments and applications or manipulations with dirty hands. The resultant inflammatory process in such cases may involve the cellular tissue of the broad ligament by extension through veins and lymphatics with consequent cellulitis, or the infection may spread from uterus to tubes direct, causing suppurative inflammation in its path, and finally involving the whole

pelvis and peritoneal covering in either pelvinous, venous or suppurative inflammation, local or spreading. The point of entrance of infection is generally the vagina or uterus but may infrequently be the bladder. The cardinal consideration in the treatment of acute invasions of this sort is, (1) elimination of the source of infection by cleansing the locus minor with curette, irrigation and drainage; (2) placing the part absolutely at rest; (3) the application of heat or cold to the abdomen, followed later by hot douching and tamponade with glycerin as a base. Constitutional treatment should consist in efforts devoted toward increasing the activity of the excretory organs, bladder, skin and rectum, and sustaining treatment with stimulants and nutritious liquid food. The administration of antistreptococcus serum is of uncertain value as is the injection of opsonin vaccinia at present. If, with the aid of the measures mentioned, nature succeeds in localizing the infection to the pelvis, further treatment is determined by the amount of damage done. Usually the infection results in suppurative inflammation of the Fallopian tubes and consequent pyosalpinx, with accompanying exudative and adhesive peritonitis resulting in the so-called pelvic exudate. Where such conditions follow it is considered better to avoid radical procedure. Ice applications when the temperature is high and later hot douching and tampons will often reduce exudates in a surprising manner, changing the inflammatory condition at the worst to a simple pyosalpinx and making future operative measures much safer, easier and far more efficacious. At times in spite of palliative procedures the exudate may refuse to resolve, in which case it will be necessary to resort to vaginal drainage, a much more satisfactory method than radical extirpation, for many times the diseased parts will recover when properly drained and the patient will not be relegated to that ever-increasing colony of "its." The worst that can happen is secondary operation under more favorable auspices.

Conditions where the infection has not localized itself but has spread to the general peritoneal cavity are grave indeed and are very often beyond the reach of human aid. Drainage of the peritoneal cavity with liberal irrigation with hot physiological salt solution and careful cleansing will save some of the patients but, as a rule, the infection has become general and death by septicemia follows. Where the inflammatory process has confined itself to the cellular tissue of the pelvis, so-called pelvic cellulitis, palliative treatment is the same. These conditions

sometimes result in abscess formation, in which cases incision and drainage is in order, the site depending upon the location of the abscess.

Where pelvic infection has resulted from the introduction of the gonococcus, the progress of the disease differs and so the treatment. The gonococcus, as has been mentioned, spreads by extension along the mucous membrane and only very rarely by way of the lymphatics of the broad ligament. The invasion may result simply in endometritis, metritis and simple salphingitis, or in suppurative inflammation of these organs with consequent inflammation and matting together of all the pelvic contents. Gonorrheal infection is peculiar in two ways, (1) the inflammatory process almost never involves the general peritoneal cavity and is, therefore, a local process; (2) the tendency of the condition is to become subacute or chronic in its progress. In outlining the treatment of gonorrheal inflammation in its acute stage the great difficulty lies in the removal of the primary source of infection at an early date. It is often said that, gonorrhea is not a curable disease. Whether this be so or not all acknowledge the absence of any specific remedy. In the treatment of the local focus of infection, generally the urethra but may be the Bartholinian glands or the cervix uteri, reliance must be placed largely on (1) rest in bed, (2) proper drainage of the parts, (3) applications of silver salts of some sort and constitutional treatment carried out along the same lines as that for acute pyogenic infection, and in addition the use of alkaline sedatives to neutralize the urine.

Drugs, of which santal wood oil is a sample, are of very doubtful value. Extreme care should be exercised to prevent the infection from spreading to the uterus. This can best be accomplished with douches of bichloride of mercury or some of the silver preparations, such as argyrol, and, in addition, gauze drainage and packing of the vagina. If infection spreads to the uterus the process generally progresses until the peritoneum is reached. The inflammation of the uterus and tubes, however, may give such slight symptoms that the condition is often overlooked, the physician thinking that the disease has been confined to the urethra, and only realizing what has happened by the sterile condition of his patient after recovery. Whenever the uterus becomes involved treatment should follow in that most difficult of all procedures, masterly inactivity. Too great condemnation cannot be placed upon intrauterine injections and applications of various

sorts, for it rarely happens that any good is accomplished and only too often the mucous membrane is rendered more susceptible to infection, and extention to tube and ovary is hastened. Avoidance of congestion, rest in bed, and good drainage will accomplish much more. In caring for the infection, where the tubes and pelvis are involved, the same methods are followed as in acute septic inflammation, remembering that the disease becomes localized, as a rule, that the gonococcus does not thrive in the peritoneal cavity, and that, therefore, the process is more apt to become limited, less severe but more chronic in its nature. Unfortunately gonorrheal inflammation often results in mixed infection with the streptococcus pyogenes or the colon bacillus and the process is made worse thereby.

Considering now infections through abdominal extension, by far the most common cause of pelvic infection is that from acute or chronic appendicitis. It is hard to say whether the appendix is more often involved by inflammation of the genital organs or the genital organs by inflammation of the appendix. The infection, however, when due to disease of the appendix, generally results in destruction of the tubes and ovaries and abdominal section is nearly always required. Where the appendix is involved secondarily to tubal inflammation, the process is by no means as violent and may resolve without abscess formation.

Brief mention should be made of tubercular infection of the pelvis. Being generally secondary to tubercular peritonitis, abdominal section and drainage will generally be sufficient and many times curative. Removal of tubes and ovaries is not often indicated.

Only too many cases of pelvic infection, both of pyogenic and gonorrheal origin, fail to resolve and the patient is left with one of two conditions, either a pelvis containing a chronically inflamed uterus, sterile pyosalpingitis, hydrosalpingitis, or tubo-ovarian abscesses, all matted together with the intestines by adhesive inflammation of the peritoneum, or, by a process of gradual absorption the tubes becoming partially obliterated, the inflammatory process in the tube and ovary subsides, leaving a retroverted uterus adherent with adnexa, bound by adhesions in the cul-de-sac of Douglas, a source of constant pain. Condition, of this sort are little affected by palliative treatment and it is here that surgery offers the greatest relief. Formerly operative procedure by gynecologists was carried to the point of complete radicalism. Ovaries, tubes and uterus were removed

without much thought of the future, and the result was, that although immediate symptoms were largely relieved, the patient was left sterile and a sufferer, often early in life, from many or all of the long chain of disagreeable symptoms of the artificial menopause. Of late years the pendulum has swung possibly to the other extreme, and the patient, who has sought relief, recovers from operation only to find herself still a sufferer, her faith in gynecology gone and, sooner or later a victim of one or more of the many science cures of the present-day charlatanry.

In the determination of the proper treatment of these so-called chronic cases of pelvic disaster it would seem necessary to take carefully into consideration (1) the temperament of the patient, (2) her general physical condition, (3) the exact condition of each of the pelvic organs, (4) the desire for children. Every effort should be made to remove as little as possible but where the chance of recovery is in the balance, removal is better than secondary operation. Women of nervous temperaments often collapse if subjected to the artificial menopause so that it may be better to leave the ovaries, even if partly diseased, in these cases. It may happen, too, that conditions, which to the eye of the operator look bad, do not cause the patient symptoms as great as it would appear, in which case, by simply remedying the immediate cause of the trouble, other conditions can with impunity be left. The general physical state of our patient may be such that a severe though necessary operation may result in shock, from which the patient may not recover at all or only in part, being left in a weakened condition for life. Where such is the case partial operation is better with possibly secondary operation later. Finally where children are wanted organs may have to be left which otherwise should be removed.

In the first part of this paper it was pointed out that the only organ in the pelvis not part of the external surface of the body was the ovary, that, whereas, each organ might be infected directly with bacterial poison, the ovary was only involved indirectly and often escaped, being bound up in the inflammatory mass, the site of simple inflammation, nonbacterial. This is borne out in practical experience by the fact that ovaries, edematous, swollen and inflamed, will recover entirely if left alone, the principal cause of the inflammation¹ having been removed. This is fortunately so, for it is the ovaries of all the organs that it is necessary to leave for the purpose of avoiding the artificial menopause. It is rarely desirable to remove both ovaries in pelvic infection.

Even where disease has attacked both organs, often sufficient tissue can be found which may be left or taken out and transplanted in the broad ligament. To be sure, this tissue often atrophies but it may not and where it does, no harm has been done by the attempt. In tubal inflammation many good results have been obtained by incision and drainage or resection. The contents of such tubes being almost always sterile, such treatment may be carried out successfully, but the prognosis is not as good as regards ultimate recovery as in the case of conservative operation on the ovary. It is often, therefore, advisable to remove both tubes, leaving the ovaries and the uterus. In chronic pelvic inflammation following the invasion of the streptococcus or gonococcus the uterus is often left in a condition of chronic endometritis with or without metritis. Simple curettage may relieve the trouble, but where metritis is present with a large, boggy, soft uterus and where it is necessary to remove both ovaries and tubes, it is better to take the uterus as well. When, however, the ovaries can be left, the uterus should be left, simply removing part or all of the tubes.

There are many gynecological patients who apply for treatment suffering from pelvic pain following what has apparently been a recovery from previous pelvic infection. In these cases the tubes may be found atrophied, the ovaries bound down by adhesions and the uterus adherent to the rectum or small intestines. The symptoms in these cases are due principally to the adhesions. By releasing the ovaries, tubes and uterus, and fixing the uterus to the abdominal wall, these chronic pains are largely relieved. Every effort should be made to cover the raw surfaces with peritoneum, for it is the only reliable method of preventing the formation of new adhesions.

In conclusion a few words may not be out of place on prophylaxis and convalescence. Continued experience for some ten years in out-patient work has led the writer to the conclusion that local treatment by applications of various medicaments to the uterine canal is of no value. Inasmuch as much pelvic infection and harm very often results from applications and instrumentation of this sort, the sooner these methods of treatment are forgotten the better. As a prophylactic measure of great importance in the consideration of the other main source of pelvic infection, the gonococcus, it would seem that much could be accomplished by intelligently spreading among the laity a more accurate knowledge of the seriousness of gonorrheal infection and by urging the

regulation of prostitutes by governmental control. It should be the duty of every physician to carefully warn his young patients, boys and girls alike, of this persistent scourge, for boys only too often are apt to look upon the disease as little worse than a cold and with as little after-effect. Care in this matter will avoid future marital complications and fewer cases of sterility.

With respect to convalescence, either following or without operation, the writer begs to emphasize the necessity of careful supervision on the part of the physician, and strict attention to instructions on the part of the patient, for it often happens that just at this period a neurasthenic patient may be converted into a well woman, while neglect will largely undo the benefit of previous treatment.

126 WEST FIFTY-NINTH STREET

REPORT OF A CASE OF IMPACTED BREECH PRESENTATION TREATED BY HEBOTOMY.*

BY

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QUOTING from Menge, in the July, 1907, issue of the *Münchener Medicinische Wochenschrift*, on "Indications for Operation for Increasing the Width of the Pelvis:" "The after-coming head is often brought down with difficulty, even in pelves with a conjugate between 7.8 and 8 cm. Hebotomy is indicated in diameters from 7.5 to 8 cm. in breech presentations." This note is quoted in endorsement merely of the following recent case of my own, delivered successfully after hebotomy, as I am ready to stand for the reasonableness of the procedure on the merits of the case alone. The statistics as to mortality in some hundreds of reported cases of hebotomy in Europe appear to run from 5 per cent. to 7 per cent. for the mothers, and from 15 per cent. to 20 per cent. for the children. In America, the statistics of twenty cases collected by Fry, in 1907, gave 20 per cent. mortality for the mothers, and 40 per cent. for the children. I have not had opportunity to collate the later operative statistics, in this country, but it is my contention that the proper status of the operation is not determined by statistics covering

* Read before the New York Obstetrical Society, Jan. 14, 1908.

cases in which the child has been already half killed and the mother's tissues maimed by ill-judged forceps application. Many cases come to the skilled surgical obstetrician too late in the history of the labor for him to do justice to either of the unfortunates. In such cases the effort to save the damaged infant by any means is likely to be to the disadvantage of the mother. It is a curious fact that we are at present at a stage of obstetric philosophy which purports to take an acute interest in the value of the child's life, and yet in practice that interest is spasmodic and erratic. Why should the value of the fetal life loom large in a positive case of contracted pelvis and yet such a life be allowed to fade away unconsidered under the pressure efforts of a dry labor? Why should it be deemed an ordinary and excusable catastrophe for the child to perish in the course of a prolonged second stage due to posterior position of the vertex? These occurrences are common enough, as well as an array of disasters incidental to high forceps operations which are accepted as mere events. The statistics of the causes of still-birth are, to the best of my knowledge, meager and unsatisfactory, but I am convinced that the lowering of fetal mortality in obstetric practice in general deserves more attention from the experts of the profession. Yet, they themselves should be bold enough to sacrifice a damaged infant in the interest of the mother's life and future health. A presumably non-viable child should be craniotomized even before death if the mother's interest positively demands it.

Passing from the consideration of the badly managed cases that come to be extricated from their difficulties, how shall the expert plan for the border-line disproportions? Logically, every relative disproportion case should be subjected to Cesarean section early in labor if we allow maximum value to the child's life. Yet the factors of a spontaneous or slightly assisted safe delivery, *i. e.*, the moulding of the head and the efficiency of the expelling forces, are in many cases so unmeasurable that medical history contains very many stories of prospective and prophesied disasters that have eventuated in easy labors. As long as we hold that the border-line case is entitled to a trial at natural labor, we shall occasionally see cases which have advanced to a point where logically a slight enlargement of the pelvic canal is the proper solution, assuming good surgical skill and surroundings. The "Walcher" posture is lauded as supplying an expedient for many such situations. This is doubtless

true, but the amount of gain in the actual area at the obstruction girdle is so slight that this resource does not compare in efficiency with the enlargement of nearly all diameters available by section of the bone or joint.

These observations are made in the defense of symphyseotomy, or hebotomy, whichever procedure may win out on its technical safety or efficiency, to be utilized only in certain selected cases of moderate disproportion between the head and the pelvis, where neither mother nor child have been subjected to obvious trauma, but where Cesarean section is contraindicated on account of the advanced stage of the labor or the imminence of infection.

Case Report.—D., married, Catholic, aged seventeen, in labor at term, was brought into the Methodist Episcopal Hospital by the ambulance at 11 A. M., January 4, 1908. Dr. J. E. Hatton, her attending physician, reported an impacted breech presentation with contracted pelvis. The patient had been in labor for twelve hours; the membranes ruptured for nine hours. No meconium had been expelled. She was a slight, small boned woman, already somewhat exhausted; pulse 120, temperature 99°. Inefficient pains recurred at from ten to fifteen minute intervals. Vaginal examination revealed both feet and the scrotum presenting at the level of the brim—position R. S. P. The diagonal conjugate was 10 cm. (equivalent to about an 8 cm. true conjugate). The cervix was thin and nearly obliterated. The external measurements were—intercristal, 27 cm.; interspinal, 23 cm.; external conjugate, scant 18 cm., a slightly flattened justo-minor pelvis. Measurements of the fetal head in the upper uterine segment gave a maximum diameter of 13 cm. The liquor amnii had apparently nearly all escaped. The bulk of the fetus was estimated as moderate and proportionate to the size of the mother, but the head probably of average dimensions. Fetal heart regular at 140 to 150. The patient was kept under observation for two hours longer with no definite change in conditions beyond slight further retraction of the thin cervix.

After consultation with the attending physician (who advocated Cesarean section) and with my associate, Dr. O. P. Humpstone, it was deemed reasonable to reject the Cesarean operation on account of the length of time the patient had been in labor with the membranes ruptured and the feet practically in the vagina. It was, of course, accepted that there was a possibility

of successful delivery by the ordinary process of extracting the after-coming head. The conjugate, 8 cm., was within the range of many histories of spontaneous or forceps vertex delivery, or of the more advantageous traction and expression expedients available in delivery by podalic extraction. But in a justo-minor pelvis, an 8 cm. conjugate means a much smaller actual passage than a similar conjugate in a flattened pelvis of larger frame. On this reasoning it was voted that the extraction of the unmoulded head would be much facilitated and the child's chances of living would be greatly enhanced by a preliminary enlargement of the pelvic girdle. The recognized exceptional interest of the tenets of the Catholic Church in the life of the child was also given weight in the decision.

Preparations for hebotomy were made, with routine surgical precautions. Under ether anesthesia the vagina and introitus were manually dilated until the closed fist could be extracted. A vertical incision, an inch and a half long, was made over the left pubic bone, separating all structures to the periosteum. With blunt dissection and the finger, the bone was bared posteriorly and an extemporized carrying needle was passed downward and carried out through an incision external to the left labium majus, and the Gigli saw drawn through. There was very little bleeding from the upper incision, and a moderate venous ooze from the lower. No apparent increase in the hemorrhage was noted on the parting of the bone, which amounted to a finger's breadth at once after the passing through of the saw. The pelvis was well supported by an assistant on either side. On withdrawing the saw the lower incision was packed with gauze. Seizing the feet, successively the lower limbs were extended and the trunk extracted slowly, rotating the occiput to the left anterior position in process of delivering the arms. The head was forced past the brim chiefly by rather severe suprapubic pressure by the assistants, flexion and guidance into the right oblique diameter being maintained by the operator. The difficulty of passing the brim was severe enough to justify the belief that delivery would have failed if the pelvis had not been severed. The perineum was torn to the second degree in the haste completely to extricate the head. The child was a male, moderately asphyxiated, responding promptly to artificial respiration and flagellation. It weighed 6 pounds, 4 ounces. The cranial measurements were: O. M., 13 cm.; O. F. 12 cm.; S. O. B., 10.5 cm.; B. P., 9.5 cm.

The placenta was readily expressed. No postpartum hemorrhage occurred. In the exciting moment of the delivery of the head no accurate note was made of the amount of separation of the divided bone ends. The upper wound was closed with two buried fine chromic and two through-and-through silkworm gut sutures. The injured pelvic floor was also repaired *secundum artem*. Two overlapping broad strips of adhesive plaster, encircling the pelvis, secured against mobility of the severed bone. Removal of the pack in the lower wound showed that oozing was too free to allow safe suture closure, it was therefore repacked with gauze.

The patient made an almost uneventful recovery. Catheterization was necessary for several days. The pack in the lower wound was removed on the second day; stitches from the upper wound on the ninth day. The highest temperature was 101.6° , on the third day; thereafter it ranged to 100° in the afternoon until the end of the first week. The pulse continued between 100 and 120 for three days, since which time it has been from 80 to 90. Beyond the adhesive plaster retention no special management of the fracture was arranged for. To facilitate the lochial drainage, the head of the bed was kept elevated about eighteen inches. The usual edema of the left labium was noted. The bowels were kept open by saline laxatives administered by the mouth. One-sixth grain of morphin was given hypodermatically shortly after the operation. Thereafter the patient was notably free from pain or discomfort, and successfully nursed her infant. She was allowed to sit up on the twenty-first day, to walk on the twenty-fifth day, and left the hospital on the thirty-first day after operation. Examination on dismissal showed the pelvic measurements unchanged. A slight sulcus could be felt on the anterior surface, and a ridge of callus on the posterior surface of the point of partition of the bone. There was no disability in locomotion.

TEMPORARY OR APPARENT DISPROPORTION BETWEEN THE FETAL HEAD AND THE MATERNAL CANAL.*

BY

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I DESIRE to present, in as few words as possible, one phase only of the subject of the disproportion, existing at the time of labor, between the fetal head and the parturient canal through which it is obliged to pass. And I shall therefore confine my remarks to an apparent or temporary condition of disproportion—due to the fact that the proper physiological moulding of the fetal head may not have been accomplished at the time of making an estimate of the relative diameters involved.

When it is duly appreciated how insignificant a variation in the diameter of the fetal skull will determine the difference between a normal case of unassisted delivery, and one which is so complicated as to require considerable skillful assistance on the part of the accoucheur in order to save important tissues, and even life itself, it is manifestly important to give due weight to every detail involved in obtaining a true measurement.

Before the head has entered the superior strait—while it is yet protected by the amniotic contents of the fetal sac—it has proportions which give us decidedly different diameters from those which will be found after the head has been passed through the parturient canal. This difference has been found by various observers to amount to from three-quarters of an inch to two inches—showing clearly what an important fact this may be where the pelvic canal is, to any considerable degree, relatively close in its measurements to the fetal diameters as they present immediately before the cephalic engagement in the superior strait under the expulsive forces of the second stage of labor.

We are all familiar with the striking appearance of the normal contour of the fetal head when it has been delivered *after the body* has passed the canal in a breech case, as contrasted with the appearance of a head delivered through the same pelvis in the course of an ordinary labor with the head presenting.

* Read before the New York Obstetrical Society, January 14, 1908.

Indeed, this unmoulded condition of the head in breech cases must be taken somewhat into consideration where the canal is unusually close and rigid as in certain primiparæ; for even the slight additional cephalic diameter may cause not a little dangerous delay at a most critical moment. For this reason, if for no other, it is an important point to observe, that labor with the after-coming head in a rigid and narrow canal should be, whenever possible, allowed to proceed slowly—until the fullest benefit may be secured of all relaxation of the mother's soft parts, in view of the fact that we *know* that we cannot have the advantage of reduction of cephalic diameters by moulding.

I shall not take up valuable time in explaining the mechanical details which obtain in the reduction by moulding, to which I am asking attention in connection with the general subject under discussion. The facts are so well established and so well recognized by expert obstetricians that it is sufficient merely to call attention to them in order to establish a safe basis of measurements to be applied for the benefit of the two lives involved. To be able to differentiate between cases which promise to go through parturition without assistance from the accoucheur, and those which are almost sure to call for skillful interference, is a most desirable proposition. To this end, no doubt, this oft-considered theme of disproportion has been brought up for our consideration this evening.

Not only is it exceedingly necessary to carefully estimate the position or attitude of the fetal head as it presents, but also to ascertain as far as possible the relation of passenger and passage in respect to the fit of the one within the other. Purposely omitting any discussion of even those cases where a *faulty position* gives a relative disproportion of most significant importance, I confine my remarks to those cases which—owing to *unadvanced processes of labor*—present diameters cephalic, which threaten to be insurmountable obstacles to a normal journey through the pelvis; but which, in the course of a reasonable application of the normal dynamics of the process of labor, will be so altered in actual measurements as to transform a “relatively contracted pelvis” into a sufficiently roomy one. In the management, therefore, of these important cases, it is of the greatest consequence that we most carefully determine whether nature has done a fair part of her work—whether the presenting head be grossly out of proportion to the canal through which it is expected to pass, whether it be in such an attitude

as to truly indicate to us its real proportions, or whether it be *still in its antepartum shape*—merely needing the slight narrowing by physiological moulding to enable it to pass readily enough through a parturient canal which at present examination seems all too small.

I have seen many a radical operation done upon the poor mother in anticipation of serious obstruction which would never have materialized—many a dangerous forceps operation performed where a few hours of patient waiting would have changed the whole picture so materially as to put interference by such means entirely out of the question.

In order that this warning note may be duly sounded, that we may not, in our pride, presumption, or precipitate judgment, make false use of our honorably acquired skill; but rather that we may be true salvators where our help is so much desired—so urgently expected—this simple word is offered in connection with a theme which demands our kindest, our keenest and our most deliberate consideration.

We must therefore keep in mind the very important mechanical fact that the fetal head is *not a solid* body of a given shape—with immutable diameters—but rather a more or less pliable mass, which, by the normal forces of labor, when properly applied, will alter its contour, will in certain important directions reduce its diametric measurements to a very considerable degree, and thereby fit itself for the journey through the pelvis.

Careful estimate and appreciation of the physical *condition* as well as the approximate size of the head is necessary, therefore, to sound judgment in deciding upon the question of surgical interference. Pressing the head well down into apposition to the margins of the superior strait, while the other hand within the vagina to such an extent as the exigencies of the case may demand, one may ascertain several interesting points.

First, the exact position or attitude of the head.

Second, the relative proportions of head and superior strait.

Third, the condition of the cranial bones, the width of the sutures, fontanelles, etc.

Fourth, the amount of apparent resistance which is opposed to the engaging of the head in the superior strait.

I was recently called in consultation to a case which will fairly represent the class of cases to which this brief paper is intended to call attention.

The patient was a young woman, who had lost her first child

in a violent instrumental delivery two years previous to my visit in her second accouchement. The internal conjugate was something less than 10 cm., and although labor had been in progress for twelve hours the head was not engaged in the superior strait.

Under chloroform anesthesia I introduced my left hand into the vagina and with the right hand directed the head to the plane of the superior strait. Finding the head round, the bones flexible, the sutures soft and wide as well as the fontanelles, no attempt at wrinkling of the scalp, nor any tumefaction of the slightest caput; finding that, in the absence of pain I could press the head well into the strait, I determined to direct all energies to bring about natural forces of the mother—and look for either an “unassisted” second stage, or at least a simple delivery with low application of the forceps. Holding the head in the position acquired for the examination described, the anesthesia was sufficiently abated to allow full normal expulsive effort, and within an hour the woman delivered herself of a nine pound boy.

The head was moulded so that the diameters were radically changed to suit the form of the somewhat contracted pelvis.

Such cases are not uncommon, and such cases may readily be subjected to serious operative interference should we fail to take into reasonable consideration the conditions to which your attention is directly asked by this very limited paper.

29 EAST 126TH STREET.

DISPROPORTION BETWEEN THE FETAL HEAD AND THE MATERNAL PELVIS AND ITS MANAGEMENT.*

BY

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EXTREME or even moderate degrees of contraction of the pelvis are easily determined; for with the pelvimeter which we use in a routine examination of all our pregnant women, we at once detect any marked deformity. Yet these results are not always as reliable as one might imagine and often one worries unnecessarily over small measurements. The mere figures of a pelvic contraction in only a moderate percentage of cases mean dystocia. I have seen cases where it has seemed almost im-

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possible for a child to pass through the pelvis at all be born spontaneously or at most assisted by an easy forceps operation. Nature is kind to most of these women. They either deliver themselves prematurely, the fetal head is small and the bones compressible, the head is well flexed, or what is most important of all, the uterus contracts with a force which will overcome the resistance of the narrowed bony pelvis, and the child is born. Another factor which must not be lost sight of, is the laxity of the pelvic joints. Some of these aids to a normal delivery can be ascertained but others are beyond all powers of diagnosis.

In 972 contracted pelves occurring in 10,000 cases at the Sloane Hospital labor terminated spontaneously in 645—66 $\frac{3}{10}$ per cent. In forty-four contracted pelves reported by Edgar, thirty-one terminated normally—70 $\frac{59}{100}$ per cent. Williams' figures are 71 $\frac{5}{11}$ per cent. In private practice, the percentage of spontaneous births is smaller, for our patients will not suffer long enough to permit of sufficient moulding of the fetal head, nor will the uterine contractions be strong enough to accomplish the delivery unaided. The problem, then, whether to assist nature or not, in the management of women with pelves under the normal measurements, is one of the most difficult to decide. Although we have taken the measurements and found the pelvis contracted, it is only too often that we are unable to gain practical advantage from the results which we have obtained.

There are a number of procedures which can be tried with success to aid nature to perform the physiological process of labor unaided. In the first place, no matter whether the pelvis of the patient is under the average size or not, it is well to caution her not to overeat. This limited diet, not lessened enough to cause loss of strength, may reduce the size of the child. Then I always insist that the uterus be supported and forced back against the spinal column to a degree short of discomfort. This can be accomplished by an obstetric corset properly put on, or by an abdominal binder. This support and pressure may cause an early engagement of the head, with good flexion. I have had only too many patients come to me and state with pride that they have sacrificed their figures by discarding their corsets. What do I find on examination? The belly is pendulous and the head is riding high above the brim. Look out for trouble in these cases even though the pelves are normal. I tell these patients to go home and put on their corsets or to get a snug abdominal belt.

Another important point is to order the patient to take long walks, especially in the last month of gestation. If they tell me they cannot walk without pain and discomfort, it is a good sign, for these symptoms usually mean relaxed joints and more room. The patients who can walk miles without any discomfort up to the day of their labor usually have more or less fixed joints and are more prone to dystocia.

Another procedure to secure normal labors or easy deliveries is to try to tone up the uterus to secure strong contractions. I believe that uterine inertia, especially among the better classes—among the hothouse women and among the athletic girls as well—is responsible for the vast majority of instrumental deliveries. How is the uterus strengthened? I will own our measures are often unsuccessful, but now and then the pains are intensified. To accomplish this, strychnine gr. $\frac{1}{60}$ to gr. $\frac{1}{30}$ is given three times a day during the last month of pregnancy associated with quinine gr. 2, or gr. 3, during the last week or two. Strong pains are the best asset in minor and even moderate degrees of pelvic contraction.

On the other hand, we must not leave too much to nature, for if we do there will follow many disastrous cases. Pelvimetry as we have said is a necessity for routine examination of patients, but the measurements taken do not tell us the whole story and minor degrees of contraction very readily escape detection. I did a Cesarean section some years ago on a patient whose external pelvic measurements were normal or even a little more than normal, but the patient had gone over time and when the forceps had failed to deliver, an examination under an anesthetic with the hand in the vagina revealed a high promontory jutting forward which could not have been detected otherwise. I remember another case at the Sloane Hospital where a disastrous result occurred in a patient with normal external pelvic measurements. She had been in labor a moderately long time, had dilated, and the head was at the outlet. The night interne, after no advance, applied forceps, pulled strenuously without any result except to injure the baby's head. When I was called the fetus was in extremis and I detected a very narrow pubic arch. The case had to be terminated by a craniotomy. These disproportions between the fetal head and maternal pelvis are very trying when discovered in this way.

Frequent and careful examinations of the patient during the latter part of pregnancy may prevent difficult obstetric operations

with dire consequences. One of the most consoling observations in any case even without pelvic contraction, is to find the head dipping into or engaged in the brim. Yet even with these good signs we must remember that obstruction can take place in the cavity and at the outlet of the pelvis. One must always, in making a vaginal examination, attempt to ascertain any bulging into the cavity, any approximation of the ischial spines or tuberosities, or any undue jutting forward or ankylosis of the coccyx with the sacrum.

On the other hand, especially in a primipara or in a multipara with previous trouble in childbirth, one must scent danger if the head is riding high above the brim in the last two weeks of pregnancy. This sign may mean a slight to a fair degree of narrowing of the pelvic brim, may mean a poorly flexed head, a posterior position, or may mean a fetal head which is either too large or too hard to descend. If by Muller's method, the head cannot be forced even a little downward into the brim, we must look for dystocia. Not that delay and instrumentation will always follow, for there are two factors which we cannot calculate, (1) the strength of the uterine contractions, and (2) the compressibility of the head. With strong pains in labor and with extreme moulding, the head may be forced through the pelvic canal spontaneously or at most with moderate help by means of the forceps. How much assistance can be obtained by comparing the measurements of the fetal head with the measurements of the pelvis by directly measuring the head through the abdominal wall (as recommended by Perret and Stone), I am unable to state as I have had but little experience with this procedure. Stone believes that this method is of value not only in choosing the obstetric operation in cases first coming under observation at full term or during labor, but also in furnishing information earlier in pregnancy as to whether the labor should be induced or whether the patient should be allowed to go to term, and a Cesarean section performed. Finally, look for trouble each day a patient goes over time. I have seen a number of cases where the child has been lost after a difficult forceps by leaving such cases to nature and letting the pregnancy go on indefinitely after the 280 days have passed. Not only does the baby increase in size, but also the head hardens and moulding is slight or impossible. These two factors often cause dystocia.

In *marked* degrees of pelvic deformity the only means of

delivering a live child is by Cesarean section. To-day there is no question on this point. Hellier and Williams place the absolute indication for this operation in a pelvis with a pelvic diameter of 7 cm. or less. The relative indication for the operation has no exact limit as to the size of the pelvis, because this limit is only reached when the forceps has been applied to the unengaged head or one which is dipping into the brim after a full test of labor and moderate tractions have been used without any advance and where a contracted uterus contraindicates version. Of course the child must be alive.

The practice of selecting a day near term or early in labor to do a Cesarean section I think is often "meddlesome" midwifery. There are too many instances on record where the case has delivered herself spontaneously before this selected date, or while preparations were being made for the operation. A similar case occurred just the other day at the Sloane. The patient had a flat pelvis with an internal conjugate of 8.25 cm. About a year and a half ago Dr. Cragin had delivered the woman by Cesarean section. At this time she had gone over time, and after a test of labor and the use of forceps could not be delivered, so the abdominal route for terminating the case was chosen. She came into the hospital the other day in labor for the second time. The head was high but she was at term, the head was compressible, and the pains were strong. After about eight hours of labor with one or two tractions with the forceps the head was brought down and a child weighing six and three-fourth pounds delivered. This case is rather remarkable inasmuch as one would expect inertia in a uterus the seat of an old scar. In the catgut tier suture of the uterine wall this scar can be with difficulty found. This has been our experience at the Sloane Hospital. Consequently the uterine contractions were not interfered with nor was there any great danger of rupture. Almost any obstetrician would have considered this case one that would surely come to a Cesarean section.

The test practised by Reynolds of manually dilating the cervix early in labor, and using the forceps tentively only, before doing a Cesarean section is insufficient. I have seen many cases where doctors have applied the forceps too soon and have failed to deliver, terminate in an hour or so spontaneously while they were waiting for assistance, or later by an easy forceps.

I certainly believe in giving nature a chance in all cases of moderate pelvic contraction, and only do an *elective* Cesarean section when one is sure the birth of a living child through the pelvis is reasonably impossible.

The operations of version and high forceps in moderate degrees of pelvic deformity are on the decline. The mortality for the babies is too high and that for the mother is not insignificant. Up to October 5, 1904, in 15,637 deliveries at the Sloane Maternity Hospital, the fetal mortality for a high forceps operation in contracted pelves was 43.2 per cent. and the maternal mortality was 1.8 per cent.; the fetal mortality for a version in the contracted pelves of the series was 49.5 per cent. and the maternal mortality 2.1 per cent. These figures for operations which carry such a loss of fetal life have made us hesitate before attempting them. If a version is performed at term in a pelvis with an internal conjugate of 8.50 cm. very few children survive. Even a true conjugate of 8.75 cm. to an average sized child is a close fit; if born alive, the arm or clavicle may be broken, or the skull or brain injured. Not that a child cannot be saved by version, even when forceps has failed, for I have often had that good fortune myself. I do believe, however, that if a version is done where the child is of fair size and the pelvis moderately contracted (an internal conjugate of 8.50 cm. or under), especially in a justo-minor pelvis, most of the babies will be lost. There are many high forceps operations in slight or moderate degrees of pelvic deformity which terminate successfully, and this method of delivery, except in extreme degrees of contraction, should always be attempted, carefully using moderate tractions, but I do condemn prolonged high forceps operations, pulling with all one's might for an hour or more. We all know perfectly well that the child in most of such cases will sooner or later die, and that the mother may be irreparably injured. In choosing a high forceps or a version, the measures most often selected for slight or moderate degrees of pelvic deformity, the best judgment in estimating the relative size of the fetal head and the maternal pelvis is required, the greatest skill in the technic of the operations must be employed, and vast experience is necessary for successful outcome.

A craniotomy in contracted pelves, if the child is alive, should never be the operation of choice, except on rare occasions. If the woman is in unfavorable surroundings and is already in such a poor condition after a protracted labor and bad manage-

ment that infection is certain, the head should be crushed and extracted, even if the child is living. Also if the child shows signs of dissolution by a rapid and weak fetal heart, if the head has sustained injuries from prolonged traction by the forceps, and if the indications are greatly against its being alive and healthy, a craniotomy should be done.

However, we should never attempt to drag a crushed head through *extreme* degrees of pelvic contractions thereby causing lacerations, hemorrhage and shock to the mother with subsequent sloughing of her tissues. In such cases a Cesarean is safer.

Symphysiotomy is an operation of the past. With pubiotomy I have had no experience.

How can all these major operations then be avoided in the minor and moderate degrees of pelvic deformity? By a late induction of labor.

Many obstetricians such as Bar, Pinard and Williams have discarded an induction of labor in the management of *all* contracted pelves. These observers claim that inasmuch as the percentage of spontaneous deliveries is high in deformed pelves, it is better to leave the case to nature. This may be true, but the small percentage which gives trouble needs consideration. They also claim that by interrupting the pregnancy too many babies are sacrificed. The fetal mortality for induction of labor at the Sloane Hospital is high. Twenty-one per cent. of the babies were still born in 100 induced labors for deformed pelves. These statistics were collected in the first 15,637 cases from the opening of the hospital in 1888 up to October 5, 1904. Many were delivered before the era of the cutting operations, before we understood the time and technic for the induction of labor as we understand these points to-day. Williams makes the statement that, after an early induction of labor for contracted pelves, 50 per cent. of the children are lost at birth or within the first month of life. I think these figures are much too high. I haven't had time to look up our statistics at the Sloane Hospital since 1904, but in my private practice I have induced labor by means of the modified Champetier de Ribes balloon in thirty-eight cases of minor to moderate degrees of pelvic deformity without any fetal mortality. Norris reports 76.6 per cent. of the babies alive after two to ten years, in thirty cases of induced labors for contracted pelves. There are two factors that we must consider carefully in inducing labor. 1. The pelvis must not be too small. 2. The child must not be too premature. The

baby should have reached the thirty-sixth week, preferably the thirty-eighth week of intrauterine gestation. In a pelvis with an internal conjugate of 8 cm. or under, the chance of saving the child is rather poor, but with an internal conjugate over 8 cm. the outlook for the child is fairly good. If the head is not too large, if the cervix is soft, and the pains are strong, I believe a very high percentage of the babies should survive. To determine just when to interfere and to estimate the exact relation of the size of the child's head to the pelvic canal, I will admit are both very difficult problems. Mistakes are often made. Labor has been induced too early and a weak premature child has died, or pregnancy has been allowed to go on too long and the child has been lost after a difficult labor. Two other indeterminable factors may be responsible for failure and are possibly the most important considerations of all in deciding to induce labor. 1. Will the uterine contractions be strong enough? 2. Will a long and immature cervix 'soften up and dilate? All our experience will not help us out on these points. In some cases I am prone to wait a little longer than I otherwise would, for the shortening and softening of the cervix which occurs in the last few weeks of pregnancy, before operating. A large field for the induction of labor is at, and after, full term. Normally at the end of gestation with an average sized baby and an average sized pelvis there is a close fit. If the pelvis is just a little undersized, or if the head is a little above the average measurements, if it is hard, if it is poorly flexed, or a posterior position, a disproportion exists, and trouble may result. I have had a very large number of cases come to me for a second confinement with a history of having gone over time from a week to a month in their first pregnancies and having lost their babies after long, protracted difficult labors. These cases I have started just at or near term and have regularly obtained a live child with fairly easy births. I believe, therefore, that in well-selected borderline cases where the pelvic contraction is slight or moderate, or in any case when there is a moderate disproportion between the fetal head and the maternal pelvis, labor can be induced without injury to the interests of the children, most of them being born spontaneously.

The best and most certain method for inducing labor not only for pelvic deformity, but for all other indications such as the various forms of toxemia of pregnancy, endocarditis, tuberculosis, etc., is a modified Champetier balloon.

I will not take your time to name the advantages of these bags for I have brought them to the attention of this Society in a long article read in October, 1904.

To illustrate how much value I give to them, I will say that they are given second place to the forceps in my armamentarium, and that I could not manage my obstetric practice satisfactorily without them.

In the first 500 cases I have used these modified Champetier balloons 138 times. In dry and protracted labor thirty-three times, and for the induction of labor 105 times, in thirty-eight of which the pelvis was contracted. In the other cases the indications were various. In these 138 cases, 108 terminated spontaneously, twenty-four required forceps, five version and one came to a Cesarean section. Two eclamptic mothers (seen on consultation) died and nine babies succumbed—three in eclamptic cases (all premature and one macerated); one died in a placenta prævia case on the second day; one died of bronchopneumonia on the twentieth day; one died of atelectasis on the second day; two were born dead after a difficult forceps operation in elderly primiparæ with uterine inertia and rigid cervixes; and one, a brow, was still born.

106 EAST SIXTIETH STREET.

ECTOPIC PREGNANCY IN THE STUMP OF AN EXCISED TUBE, CAUSING ATTACKS OF INTESTINAL HEMORRHAGE.*

BY

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New York.

(With Plate and One Illustration.)

ON November 13, 1907, a patient consulted me in my office in reference to an operation for hemorrhoids which a surgeon had proposed and intended performing in a day or two, for repeated attacks of bleeding from the anus. On questioning her I learned that she was thirty years of age, had been married fifteen years, had had three children, the last one eight years ago, and since then several miscarriages at the sixth and eighth week, which she had had induced. The last induced abortion was two years ago. She was very ill after that, and was laid up for two months in the Presbyterian Hospital. In September,

* Read before the New York Obstetrical Society, Jan. 14, 1908.

1906, she had the left adnexa removed at the Memorial Hospital by Dr. Frank S. Matthews, and although she made a good recovery from the operation she continued having pains in the left groin, and was far from feeling well. These symptoms persisted in varying degree up to the time of the consultation, but during the prior two months a new symptom had developed, which consisted in repeated attacks of bleeding from the rectum. These attacks recurred at intervals of from six to seven days. They were preceded by colicky pain in the left groin, necessitating her to go to stool at once, when she would find that the chamber would be half full of pure blood and clots. During the following twenty-four hours the stool would be streaked with blood, then the stool would be apparently normal until the next attack. In all, she had had seven such attacks. Her menses, since the operation, had recurred at intervals of three weeks, but had not recurred for over two months. She was not positive of the date of the last menstruation and paid but little attention to its absence, attributing it to her run-down condition. Her general condition, apart from a rather marked anemia, was fairly good. On examination of the rectum several moderate sized, external hemorrhoids were found. These, I felt confident, were not the cause of the intestinal hemorrhage. A sigmoidoscope was passed in the knee-chest position, and the entire rectum and lower sigmoid was found to be normal in appearance. On bimanual examination the uterus was found to be slightly enlarged and very hard to the touch. To the left of the uterus was an irregular mass, apparently the size of a small closed fist, very closely attached to the side of the uterus, rather fixed, and not very sensitive. Its consistency was semi-elastic. A very careful and thorough examination of the entire abdominal area failed to find any other mass or growth which might be the cause of the intestinal hemorrhage.

The conclusion reached was that the mass, to the left of the uterus, was probably a foreign body left within the abdomen at the operation fourteen months before, and that this, probably by ulcerating into the bowel, was causing the hemorrhage. Still, when the patient was being prepared for operation on the table, I said, half in jest and half in earnest, that we might find an ectopic pregnancy.

The patient was operated upon by me in Mount Sinai Hospital on November 16. On opening the abdomen no free blood was found in the peritoneal cavity. Projecting from the left side

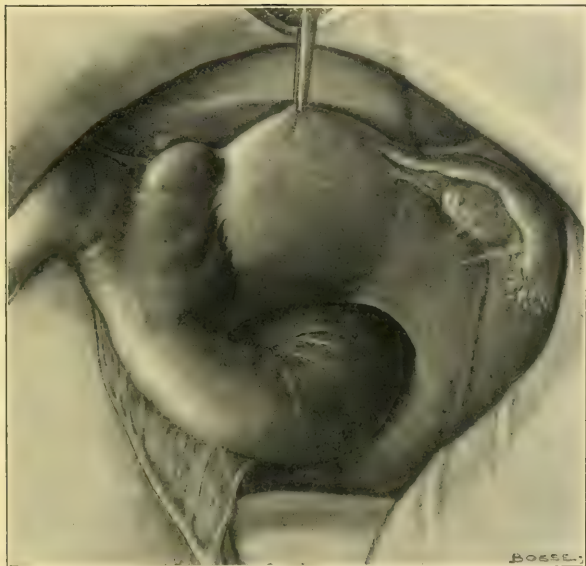


FIG. 1.—Showing gestation sac adherent to signoid.



FIG. 2.—Gestation sac laid open X embryo.

VINEBERG.—ECTOPIC PREGNANCY IN STUMP OF EXCISED TUBE

of the uterus was a dark bluish mass, the ectopic sac, somewhat tortuous in outline, about the size of a hen's egg. The sigmoid flexure covered the entire outer and lower border of the sac. The bowel was so closely adherent to the sac that in separating it with the greatest care an area of the bowel about 2 cm. long and 1 cm. wide was denuded of its peritoneal and muscular coats. (Figs. 1 and 3.) A thorough search was made for any opening in the bowel at the part where it was most intimately connected with the sac but none was found there or elsewhere. On cutting open the sac after its removal it was found to contain a small quantity of blood and an amniotic sac containing an embryo of about eight weeks old (vide Figure 2).

As the right adnexa were buried in more or less adhesions, and the uterus was in a condition of marked fibrosis, and particularly as the left side of the uterus was found to be in a ragged and raw condition after the enucleation of the mass, it was decided by me to do a panhysterectomy in the interest of the patient's welfare, immediate and remote.

Before closing the abdomen a thorough search was made of the entire abdominal cavity for any growth or abnormal condition but none was found. The patient made an afebrile recovery, leaving the hospital December 4, eighteen days after the operation.

There has been no further recurrence of the intestinal hemorrhages.

January 14, 1908. I saw the patient in my office to-day, seven weeks after the operation. She was quite well and has had no further hemorrhage.

In the removed right ovary a good sized corpus luteum was found.

Dr. Matthews was so kind as to furnish me with full notes of his operation. There was a large ovarian abscess on the left side with the tube very closely incorporated with it and containing some pus. It appeared to him that he had removed the entire left tube with the ovarian abscess. The operation was very difficult on account of adhesions with the sigmoid. A pelvic gauze drain with the end into the vagina was employed and the sigmoid was spread over it. The patient made a normal convalescence and was examined by him a month later in his office, when he found some thickening of the left broad ligament.

The right adnexa were found perfectly normal by him at the time of operation and were left intact.

The foregoing case offers several features of great interest. The two of the most interest are: (1) The implantation of the ovum in the very short stump of a tube left after what was supposed to be very thorough extirpation of a pyosalpinx and an ovarian abscess.

In an extensive search of the literature I find only one case presenting similar conditions. This was reported by J. C. Morfit (*Medical News*, Vol. 76, 1900, page 869) in a young woman from whom he had removed the right tube and ovary in 1897 for a moderate-sized pyosalpinx. He did not remember how close to the uterus he had ligated the tube. In December, 1899, he operated again on the patient and found the



FIG. 3.—Same as plate. Viewed anteriorly, showing gestation sac adherent to sigmoid.

stump of the right tube the seat of an ectopic pregnancy which had ruptured and filled the abdominal cavity with blood. The left adnexa was apparently normal and the left and only ovary contained a large corpus luteum.

Keller (*Des grossesse extra-uterine*, Paris, 1872) reports a case of tubal pregnancy with a fatal termination occurring subsequent to a supravaginal amputation of the uterus by Koeberle (*Winckel Handbuch der Geburtshilfe*, Vol. II, page 859).

Wendeler (*Beiträge Zur. Geb. u Gyn. Festschrift*, A. Martin, 1895) narrates a case of tubal pregnancy following a vaginal hysterectomy. The pregnancy had advanced to about the eighth week, when the patient began to have hemorrhages from the vagina. Wendeler found a small cyst (amniotic sac)

attached by a slender pedicle to the interior of the tube which opened into the vagina. He was able to curette away chorionic villi from the interior of the tube. This event took place six years after the hysterectomy. The patient during the time had suffered from menstrual molimina, but when the tubal pregnancy took place these ceased and the patient suffered from nausea.

M. Vautrin (*Rev. Med. de l' est*, 1906, Vol. 38) reports a case of tubal pregnancy following a vaginal hysterectomy by morcellement for a large uterine fibroid. Owing to dense adhesions a part of the left tube and ovary were left behind. The patient continued to menstruate irregularly and scantily after the operation, and on examination he found that the blood came from the end of the tube which had been caught in the scar in the vaginal vault. Nine years after the hysterectomy he was called hurriedly to the patient and found her suffering from marked sepsis. On examination he found a pelvic tumor with a small opening in the vault of the vagina and dark fetid liquid escaping through it. On dilating this opening he was able to enter into a large cavity filled with blood clots, putrefied débris, and a fetus of three months. The perusal of the report is not fully convincing and one cannot dismiss the doubt that the entire uterus may not have been removed by the morcellement operation (as strange things as this have happened in similar operations by expert operators), and that the pregnancy had occurred in the portion of the uterus that had not been extirpated. The persistence of the menstruation for nine years subsequent to the operation would lend color to this view.

That the stump of a tube which has been ligated and the distal part amputated may in time again become patulous has been demonstrated many years ago. Dr. Emil Ries of Chicago in 1897 (*Zent. für Gyn.*, 1897, Number 28) reported three such cases. He examined the tubal stumps in three cases of hysterectomy in which an amputation of the tubes had been done some time previously. In all, the tubal stumps were widely patulous and the lumen provided with well-preserved epithelia. This probability is so well recognized at the present day that in order to render a woman sterile double ligation and resection of the tubes is no longer deemed adequate.

The second interesting, and I may say unique feature in the present case consists in the attacks of intestinal hemorrhage. In my search of the literature I have not been able to find an

analogous case. The explanation of the phenomenon seems, to me, to reside in the well known property the trophoblasts possess of penetrating and eroding any tissue with which they come into direct contact. It is well known that in tubal pregnancy the trophoblasts, so to speak, often eat their way through the tubal wall producing pin hole openings which again are filled with minute plugs of fibrin. It is in this way that the repeated intraperitoneal hemorrhages frequently occur in tubal pregnancy, without either rupture or abortion having taken place. That the syncytium of the villi can act in a similar manner upon tissues other than the genital system is also well recognized, for example, the metastatic growths in chorio-epithelioma.

It may be asked, and I have asked myself the question, granting the foregoing, how is it that intestinal hemorrhage had never been noted before in ectopic pregnancy when we know that intestinal adhesions to the ectopic sac are of frequent occurrence? While it is true that adhesions between some portion of the intestine and the ectopic sac are common, conditions analogous to these present in my case must be very rare. In the first place, as we have seen, there is only one other case (Morfit) on record, in which the implantation of an ovum has taken place in a tubal stump. The stump in my case was evidently so short that as the ovum grew it was forced to form the closest relation with the adjacent structures, which in this instance was the wall of the sigmoid. The adherent sigmoid formed, therefore, a part of the bed in which the ovum developed.

In the eighty odd cases of ectopic gestation I have operated upon myself, and in an equal number I have seen operated, I have never witnessed such close relation of the intestine with the gestation sac as obtained in my case.

If the etiology of the attacks of intestinal hemorrhage was not that which I have taken it to be, what else could it have been? The attacks occurred when the gestation was a few weeks old and recurred at irregular intervals until the gestation was interrupted by surgical removal of the products. They have not recurred since. The woman is in good health, and a thorough exploration of the abdominal cavity at the time of operation failed to find any other lesion or growth which might be a cause. A sigmoidoscopic examination of the rectum and lower sigmoid prior to the operation found these portions of the bowels perfectly normal. It appears to me that the evidence is very strong in favor of the explanation above offered. Of course it may

be said that to make the case incontrovertible, a portion of the intestine should have been excised and submitted to a microscopic examination. I recognized this at the time of the operation but did not feel justified in exposing my patient to the risks of such a procedure in order to establish a scientific fact.

The case offered two other features of interest. (1) The external migration of the ovum. (2) The absence of decidual reaction of the uterine mucosa.

The first forms another argument in favor of the assumption that the changes the ovum undergoes, or rather the lapse of time it has to develop before it reaches the tube may be a cause of its implantation at an abnormal site.

The second furnishes a further evidence that the uterine mucosa does not always take on a decidual reaction in tubal pregnancy as has been asserted by many authorities.

751 MADISON AVENUE.

EAR DISEASE IN INFANCY AND CHILDHOOD.*

BY

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IN the light of present-day knowledge it is difficult to understand why a subject of such great importance as ear disease in children should have been, until recent years, comparatively neglected. Thanks to the enlightened work of a few enthusiasts in modern schools and hospitals, this department has at last been separated from that of gynecology, of which it had always been an inconsiderate part, and made one of the most progressive and important branches of modern medical science.

If the profession was so long in realizing the importance and possibilities of this part of their work—surely the people, and especially the great masses, can scarcely be blamed for the ignorance of the subject which to-day prevails everywhere, and against which our organized forces are battling with ever renewed vigor and increasing success.

When we consider the great lack of popular knowledge in the hygiene of special organs, I know of no branch in which, among

* Read before the Harvard Medical Society, January 25, 1908.

the people—and I am sorry to say among some members of the profession itself—there persists such a lamentable lack of the first principles of protection, and so general an adherence to ancient popular fallacies and exploded therapeutic theories of our forefathers as is the case in the organ of hearing.

The very means provided by an all-wise Creator for the protection of this apparatus and the preservation of its function are ruthlessly abused by its human possessor, who at the first sign of impairment or distress therein, proceeds at once to carry out his so-called "home remedies" handed down from the ages, all of which are harmful and some are positively dangerous.

It has been said that nothing is so full of danger as the "wisdom of our forefathers" and the truth of this is brought home to the otologist when he is called upon in a given case to decide how much of damage is due to the disease and how much to the remedies previously applied by the patient and his skillful friends.

It is not at all uncommon to see in the dispensary cases which at first sight present most of the features of a fulminating acute otitis and mastoiditis in which a careful examination will entirely exclude aural disease, but will disclose a history of simple earache from dental caries which has been treated with "camphorated oil," carbolic acid, tincture of iodine and the like, poured into the canal and applied to the mastoid region.

Special pains are always taken to instruct these patients and those responsible for them, and no little argument is needed to convince them of the error of their ways.

Unfortunately the greatest sufferers are infants and children who are likely to fare badly at the hands of this prevailing ignorance, and to the causes, treatment, and prevention of their troubles, I will presently refer.

When, now the young otologist at work in the ear clinic roundly berates the unenlightened patient, let him be reminded that the evolution of the principles upon which he practises present-day otology has been one of the slowest in all medicine.

If we but glance at the development of otology from the earliest to our own time we will learn that, although works were written in large number on the anatomy, physiology and diseases of the ear, the treatment was purely empirical and the knowledge of anatomy and physiology was only fragmentary, incorrect and absurd.

From the time of Galen, whose knowledge of ears extended

no further than to enable him to aptly call the internal ear the *labyrinth*, the science of otology has groped down through the astounding period of 1300 years, during which time learned and skillful members of our profession dropped all manner of peculiar and disgusting mixtures on to a tympanic membrane which they never saw, and probed canals which they had never examined.

The great otologist, Wilde, writing in 1853, declared that "affections of the ear, whether functional or organic, were spoken of, lectured on, written of, and described" even in his day—not according to the laws of pathology which regulate other diseases, but by a single symptom, that of deafness.

Again, in the preface of his admirable book, written as recently as 1873, Roosa says: "Ten years ago, in most parts of this country the practice of otology was confined almost exclusively to charlatans, and all persons wishing advice on ear disease were obliged to seek it outside of the medical profession."

There can be no doubt then that the science of otology is a recent development in the field of medicine and some time must still elapse before its principles, and especially those relating to preventive measures, will become popular knowledge and be generally acted upon.

The battle in behalf of enlightenment and truth is but just begun and despite the efforts of medical missionaries and health boards, people of all classes are still in the dark. Despite the efforts of modern otologists nasal douching and syringing are still prescribed and instruments devised for their carrying out notwithstanding the fact that every ear hospital has its annual quota of acute otitis and its complications due to this cause.

The individual with a perforated tympanic membrane still learns on his way to the operating room that his salt water bathing and diving are responsible for the lighting up of his old troubles and for the operation he is about to undergo.

Masters of Art, Doctors of Law, bankers, great business and social leaders, in spite of the declamation against this practice of one Arcularius, M. D., in the 15th century, still stuff cotton into their ears "to keep from catching cold in them," thus producing conditions which make of their auditory apparatus ideal culture tubes for promoting the growth and virulence of the very cause of their troubles.

There still exist families who look upon the diseases of infancy and childhood as a matter of necessity, and in which maternal

solicitude is based upon the hope that all the children will have all the exanthemata and get through with them, fully satisfied if they escape with nothing more dangerous than a running ear, which, if it does not "wear away" or be "outgrown," serves the useful purpose of scattering for an indefinite period the germs of the disease which caused it.

Thus it can readily be seen that in orphanages, foundling asylums, and hospitals of all kinds such ears have undoubtedly been the subtle means of causing the periodic epidemics of scarlet fever, measles and the like, which produced an endless chain of discharging ears to carry on the deadly history and thwart all methods of prevention.

When one now considers that these diseases are preventable, and especially that the ear complications, instead of causing permanent afflictions during life, can, in the great majority of cases, be brought promptly to perfect healing with restored function, it behooves the members of this great disease-preventing profession to lose no opportunity of gaining correct knowledge on these points and spreading it as far as possible among the people.

The fallacy of hereditary deafness is responsible for many cases of ear disease which, were it not for the prevalence of such fallacy, might have been saved their life-long affliction. The cases of hereditary deafness are indeed few which could not have been prevented by early establishment of proper hygiene and treatment.

Even those forms of deafness dependent upon sclerotic processes and generally considered hereditary and unpreventable, I believe to be due to conditions which are as yet unrecognized and which will later come under the general head of preventable forms. In fine, it may be said that inherited conditions which make for deafness can and must be early recognized and corrected. Therefore, if we would preserve the hearing function in the adult we must begin with the infant—we must protect the infant and the child from acquiring the preventable infectious diseases, and, having acquired them, we should have knowledge of the best methods for carrying them safely through their ear complications with complete restoration of function.

There is nothing that will arouse interest in this branch so promptly as an attack of acute purulent otitis in the physician's immediate family, and I regret to say that the questions asked on these occasions by an anxious father are likely to betray

a lack of recent knowledge of the subject and sometimes to cause unnecessary anxiety and distress.

It seems most important, then, that a working knowledge of the various forms of ear disease should be in the possession of all practitioners no matter what their special field of work, in order that the great preventive processes may move onward with the spread of knowledge. In this relation it occurred to the writer that a brief reference to the history of the development of otology and to the prevailing popular ignorance of this branch at the present day, might prove an interesting subject for consideration by this society whose members are engaged in so many different specialties, and, therefore, this paper, avoiding all the usual data of a formal dissertation, will be confined to a brief and concise consideration of the ear conditions most commonly encountered in the experience of the writer in hospital and private practice.

The otitis of children may be roughly divided into two classes: The *first* arising within the tympanum from causes brought to it by morbid agents in the circulating blood; and, *second*, those comprising infectious processes set up by inflammatory and congestive conditions in the immediate neighboring structures.

The first class is associated with some concomitant general disease such as syphilis or tuberculosis, and for the sake of brevity must be passed over here, not, however, without warning that the possibilities of these conditions must be kept in mind in all cases not yielding to ordinary methods and remedies.

The *second class* embraces by far the greater number and the most frequently met with.

For a thorough appreciation of the close and important relations between the nose, naso-pharynx, and middle ear, a correct imagination of these structures based upon anatomical knowledge is absolutely imperative, and without this knowledge there can be no understanding of the causes, progress, and prevention of ear disease in infancy and childhood.

Perfect functioning of the elaborate hearing apparatus depends primarily upon automatic inflation of the tympanic cavity through a free and patulous Eustachian tube, and this in turn is dependent upon perfect freedom and balance of circulation in these and their neighboring structures.

This brings us at once to the greatest disturber of these conditions, namely, hypertrophied lymphoid tissue in the pharyngeal vault and hypertrophied and diseased faucial tonsils.

One might say that all the principles of treatment and prophylaxis in otology lie in a full knowledge of these pathological structures and a sound imagination of the damage being done by them in their various degrees as made out by the mirror and digital examination.

Now the natural occupant of the naso-pharynx, Eustachian tube and tympanic cavity is air. The supply of this must be unobstructed and the action of the muscles concerned in the elaborate aëro-dynamics of this region must be free and unimpeded. Hence, the occupation of this space or its fossæ by adenoid growths is always attended with disturbance of its primary functioning principle, which is then the reverse of normal, and air instead of being automatically furnished to tube and tympanum is actually withdrawn from these spaces, thus creating within them vacuous conditions whose negative pressure soon sets up exudative processes upon the lining mucous membrane. This adenoid mass, both on account of its own circulation and the pressure it causes upon the elaborate neighboring structures keeps up at the mouth of the Eustachian tube a constant vascular engorgement which extends to the tympanic cavity and its contents as well. These conditions can readily be recognized behind the bulging tympanic membrane.

When it is now recalled that during the first year and a half of infant life the tympanic cavity contains a gelatinous cushion which early anatomists described as a proliferation of the internal wall, but which we now recognize as primitive lymphoid jelly, and when in addition to this we have the obstructions in the nose and naso-pharynx described above, coupled with the inability of the infant to clear those passages of the accompanying ropy catarrhal secretions which cause the stuffiness so familiar to us all—it must be readily seen that such conditions offer peculiarly attractive haunts for the cultivation and growth of all kinds of microorganisms gaining entrance through the inspired air.

Moreover, it is scarcely conceivable that such an infant would pass through any of the exanthemata without involvement of the hearing apparatus. The method of infection is practically the same in all of these diseases. The conditions described above, plus the wide open lymphatics in the infant's posterior pharyngeal wall and lowered general resistance due to lack of oxygen in the blood, complete the physical picture of the candidate for infection.

The earlier these conditions are recognized and corrected the smaller will be the number of children with defective eyes, damaged ears, maxillary deformities, dental malocclusions, undeveloped chests and all the well-known stigmata of physical and mental backwardness.

I have here described the condition most marked and most frequently encountered and because of its striking features the most readily recognized. There is, however, another class of such cases seen mostly in older children in which the cause of their ear troubles while fully as harmful, is more subtle and much less easily recognized. I refer to the younger run-about children whose facial expression and general health give no apparent evidence of present or previous nasal obstruction. Here let us recall the fossæ or clefts existing in the naso-pharynx immediately behind and above the Eustachian cushion, ascribed to embryonic origin by Rosenmüller, and in the old nomenclature bearing his name. Now the situation of these fossæ is such that any mass of tissue within them, such as adenoid growths, seriously impedes physiological action of the muscular structures of the Eustachian cushion concerned in opening and closing the pharyngeal tubal orifice. Now while the child is in the upright position by day this growth gives scarcely any evidence of its presence but when he lies down at night it is perfectly capable of becoming greatly engorged even to the extent of impeding respiration, thus in a subtle manner producing damage to the general health and special harm to the hearing apparatus.

These cases may or may not have marked impairment of hearing but their occasional earaches and intervals of deafness are likely, sooner or later, to culminate in an attack of acute fulminating otitis media.

I am reminded here that perhaps I ought to mention in passing that my remarks apply more especially to the average healthy child, whose resistive reaction to infection is attended with great pain and febrile distress, but it is well to bear in mind that in the very young infant and in the weakling enfeebled by congenital or acquired disease, an acute purulent otitis perfectly capable of fatal complications may first be evidenced by discharge from the auditory canal without any apparent previous symptoms whatever.

I would call your attention to the fact that of the great armies of youths and adults seeking relief in hospital and private treat-

ment to-day and expending untold sums of money upon various and useless aids to hearing, advertised in the daily papers, by far the great majority of them can date the beginning of their troubles to unrecognized, untreated or insufficiently treated otitis of the types referred to in this paper which occurred during their infancy or early childhood.

How then can we treat these acute ears so that the process may be checked, the tympanic membrane preserved intact, and its function restored?

My practice at the New York Foundling Hospital is as follows: When the diagnosis of acute otitis is made the drum is not pierced but split posteriorly, and, like any other abscess, is thus made to drain from its lowest point. This is done whether or not spontaneous rupture of the tympanic membrane has occurred and under frequent and proper irrigations of salt solution, carried out with a hand syringe, healing occurs in most cases in from ten days to two weeks. Of course, the clearing of the nasopharynx and especially of the Rosenmüller fossæ should be carried out as soon as the age and strength of the child will allow.

In older children the method is practically the same. If the otitis is a complication of some concomitant disease the routine treatment is to split the tympanic membrane without anesthesia—reserving the pharyngeal operation to be carried out as soon after recovery as possible and under light general anesthesia.

If the otitis occurs in a child running about and otherwise well and, too far advanced to yield to abortive measures, is going on to apparent spontaneous rupture, this outcome is anticipated by incision of the tympanic membrane and clearing out of the naso-pharynx and its fossæ under light general anesthesia. Acute otitis is not a contraindication to the proper removal of adenoids or tonsils.

While the writer is aware that cases in the hands of colleagues go on to all kinds of complications with and without recovery, in spite of the skillful practice of these methods it has been his good fortune never to have had a case of mastoiditis develop in which he had the opportunity to treat the case in its incipient stage, and he believes that the practice of these methods at the New York Foundlings Hospital is responsible for almost the entire absence of mastoiditis, during the past five years, among the 2500 children usually in its care, and of reducing the number

of chronic running ears within its walls to less than twenty-five according to last month's report.

This experience then leads him to believe that if these methods were properly carried out in each case of otitis in infancy and childhood there would follow in the great majority of cases complete healing of the drum membrane with eventual restoration of the hearing function instead of destruction and damage to the membrane, which lays the foundation of future deafness—and that mastoiditis and intracranial involvement in children would be much more rare than under the expectant methods so largely practised at the present time.

78 EAST FIFTY-FOURTH STREET.

THE USE AND ABUSE OF SALT SOLUTION.*

BY

EDWARD A. BALLOCH, M. D.,

Washington, D. C.

THE history of medicine has many chapters wherein is shown the curious tendency of the profession to chase after therapeutic will o' the wisps only to find itself led into a quagmire of doubt and disgust. It needs no very extended experience in medicine to enable one to cite many confirmations of this statement. The genesis of these therapeutic stampedes is alike in most instances. Some zealous and imaginative individual has apparent good results from a given agent or remedy. Without stopping to analyze his results or to inquire whether they are based on sound physiologic or therapeutic bases and filled with a dread lest some one should anticipate him in his wonderful discovery, he rushes into print with an imperfectly digested account of the new agent and fortifies his position with a more or less lengthy list of cases which appear to sustain his claims. Others follow in his wake, accepting his conclusions without hesitation, and soon the new agent is lauded as the long-sought therapeutic panacea and our journals are burdened with accounts of the good results following its use in most dissimilar cases. Then arises some doubting Thomas, with a little knowledge of physiology, and questions the soundness of all this testimony. Gradually, after much argument *pro* and *con*, the remedy finds its proper place

* Read before the Washington Obstetrical and Gynecological Society, November 1, 1907.

in our therapeutic armamentarium or is consigned to the graveyard where lie in eternal repose so many of its predecessors. It is to one of these agents and its proper field of usefulness that I desire to call your attention, viz., physiologic salt solution.

The range of inquiry will cover:

- I. Its nature and properties.
- II. Its field of usefulness.
- III. When and how it should be used.

Normal, or, more properly, physiologic salt solution is no complex remedy and calls for no extended chemical knowledge to understand its composition. It is simply a solution of sodium chloride in water in the proportion of seven parts per thousand. Its use in the physiologic laboratory antedated its use in practical medicine. It is intended to be a fluid isotonic with the blood-plasma and to be strictly so, the solution should contain nine and one-half parts per thousand of sodium chloride, but practically there is a permissible range of variation between six and nine and one-half parts per thousand.

Sodium chloride is probably the most important inorganic salt of the body. It is the only one that man adds to his food and the only one that graminivorous animals crave. It is an important constituent of the blood-plasma and it is to this fact that physiologic salt solution owes its origin. Some formulas contain other of the plasma salts, such as calcium and potassium chlorides, in combination with the sodium salt. Bearing in mind the fact that physiologic salt solution is simply an artificial blood-plasma, its use should be limited to those affections in which alterations of the plasma play a part. Such alterations may be in quantity or quality. The principal quantitative change in the plasma is the lessening of its volume as a result of hemorrhage. Physiologists have shown that losses of blood amounting to 3 per cent. of the body weight of an animal may be withstood easily, and the losses quickly replaced, while a loss amounting to $4\frac{1}{2}$ per cent. of the body weight (more than one-half the entire amount of the blood) will be fatal. Recovery from hemorrhage is more certain if solutions isotonic with the blood-plasma are injected into the veins immediately after the loss of blood and animals will stand a larger loss of blood if this measure is resorted to at once. The effect of intravenous infusion is to cause an increase in the intravenous pressure in the vena cava, and to fill the heart with fluid, thereby causing a fuller pulse and increasing the blood-pressure. The red corpuscles

that still remain after a hemorrhage are kept in more rapid circulation and thus utilized more completely as oxygen carriers (Howell). Regeneration of the plasma is a rapid process, the normal volume of the blood being replaced in a few hours after a slight hemorrhage and in from twenty-four to forty-eight hours after a more serious one. The red corpuscles and the hemoglobin are regenerated only after several weeks. After very large infusions extensive oozing occurs and insignificant hemorrhages recur vigorously (Crile). In the exposed animal heart the sodium salts appear to increase the contractility of the heart muscle. The use of salt solution after hemorrhage is, therefore, a rational procedure, but caution should be used in not overdoing the matter, and, by giving too large a dose, causing the recurrence of capillary hemorrhages. Another caution is that the strength of the solution should not vary much from the limits given, $\frac{6}{10}$ to $\frac{9}{10}$ per cent., as solutions not isotonic with the plasma may cause hemolysis and disintegration of the red corpuscles. That this is not a fanciful statement is proved by the results of experiments in the physiologic laboratory. These experiments show that a solution of sodium chloride in a lower proportion than seven parts per thousand causes hemolysis and that the number of corpuscles destroyed and the rapidity of the hemolysis increase rapidly with the lowering of the osmotic pressure (Howell). Extemporaneous solutions are particularly open to criticism on this account.

After hemorrhage, shock is the principal postoperative condition giving concern to the surgeon. In shock the blood-pressure is lowered. The introduction of salt solution into the circulation will cause a rise in blood-pressure. Its use, therefore, in conditions of shock, seems, at first sight, to be reasonable. In practical surgery the phenomena of shock are so intimately connected with those of hemorrhage that it is difficult to separate them. It is probable that most of the good results reported from the use of salt solution in shock are due to its use in cases in which hemorrhage is a factor. Crile's experimental work bears out this statement. This acute observer found that in experimental shock without hemorrhage, salt solution was of no decided value. In pure shock the blood-pressure is lowered as the result of a vasomotor paralysis which causes dilatation of the peripheral blood-vessels. Just how the infusion of salt-solution will remedy this condition, is not apparent. Where hemorrhage is a factor in shock, salt solution is valuable. This

means that the loss of blood is the cause of the shock and that the replacement of this loss by an artificial plasma will alleviate the phenomena of shock pure and simple. This is equivalent to saying that the use of solution in cases of shock not caused by hemorrhage is illogical, and I believe this to be true.

In a third class of cases in surgical practice there is a dehydration of the tissues. This is a natural sequence of large blood losses, but I am referring now to those cases where hemorrhage does not play a part. Obstruction of the upper bowel will bring about such a condition as I have in mind. As W. J. Mayo says, we eat with our small bowel and drink with our large bowel. Any obstruction that prevents fluids from reaching the large intestine will cause a dehydration of the tissues. In the after-treatment of operative cases of this nature, salt solution is a valuable aid.

Bov   claims good results in anemic patients following daily enemata of salt solution. The treatment is continued for a month or more. It is probable that other factors in treatment, such as prolonged rest in bed, a selected diet and general hygienic measures, have more to do with the results than the enemata of salt solution, as it is hard to see how the introduction of sodium chloride into the circulation can increase the number of red corpuscles or the hemoglobin percentage.

In looking over the above indications for the use of salt solution it will be seen that they have one factor in common, viz.: an alteration in the quantity of the fluid portion of the blood, either from direct hemorrhage or from dehydration of the tissues from other causes. Its employment in this class of cases is logical and I believe that its principal field of usefulness is confined to these rather narrow limits.

The alterations in the quality of the plasma are those which result from toxemias. The plasma becomes saturated to a greater or less degree with toxins. By diluting the plasma with an isotonic neutral fluid, the solution of toxins will be made more dilute and consequently less harmful to the organism. This seems a reasonable explanation of the good effects following the use of salt solution in septicemia, eclampsia and other toxemias. The increased flow of urine following the use of this agent carries out of the body more or less of the harmful toxins. Its use in toxemias is based on sound principles. We are, in short, endeavoring to wash the blood, to lessen the absorption of harmful toxins and to increase their elimination by the kidneys.

A fourth use of salt solution may be mentioned here. I allude to its use as an irrigating fluid. Many operators leave a quart or more in the peritoneal cavity after abdominal operations with a view to preventing adhesions, diluting toxic material and lessening shock. I believe, however, that the trend of the best surgical practice is toward dry operating. Where irrigation is indicated, salt-solution has the merit of being harmless. Limiting my remarks to abdominal work, I believe that better results will follow the removal of pus and other foreign materials by sponging than by copious irrigations. I am aware that many good operators will disagree with this statement. As to the prevention of postoperative adhesions, I can only give my personal experience, which is that I cannot see that the use of salt solution has any effect in preventing adhesions. I have tried both methods and cannot see that the frequency of postoperative adhesions is in any way lessened by the practice of leaving salt solution in the peritoneal cavity. An animal will absorb from the peritoneal cavity from 3 to 8 per cent. of the body weight of fluid in an hour. Hence we may conclude that any amount of salt solution left in the cavity will be absorbed before it can be of any use in the prevention of adhesions. In my opinion the best results in abdominal surgery are to be obtained by avoiding unnecessary handling of the viscera, by covering in raw surfaces, by clean dissections and by the removal of pus, blood and débris by simple dry sponging. In my judgment intestinal paresis is the great factor in the formation of adhesions.

In using salt solution, four routes are open to us, the peritoneal, the intravenous, the subcutaneous and the rectal. The use of the peritoneum as an absorbing surface is not entirely satisfactory. The practice of leaving salt solution in the cavity has already been alluded to. I am inclined to think that the absorbing power of the peritoneum is lessened by the traumatism necessary to an operation. Many prefer the intravenous route, and in cases of emergency it may be useful. The time consumed in finding the vein, the danger of air embolism and pulmonary edema, and the risk of infection at the point of injection are all objections to the use of this route. If given intravenously, the injection should be made slowly, fifteen minutes being allowed for each quart of solution. It may be questioned whether absorption is materially more rapid than by the subcutaneous route. If the injection be made in a place where the connective tissue is abundant, absorption is surprisingly rapid. The submammary region,

the axilla, the flank and the thigh are locations favorable to rapid absorption.

My own preference is for the injection of a small amount only at any one place. If necessary two or more injections may be made at different points. I believe that a more rapid and complete absorption is secured in this way. The temperature of the solution is a matter of some importance. A temperature of 115° F. in the container is none too high. I have seen chills follow the use of the solution at a temperature of about 100° F. Cushing attributes these chills to the hemolytic action of the solution.

As to the time for using the solution, I believe that we should try to anticipate the need for it. My own rule is to use it whenever I think that there has been a sufficient loss of blood to warrant it. I try not to wait until the failing pulse and blanching lips imperatively demand its use, but strive to anticipate these symptoms. Given early in a bloody operation it can do no harm and may do much good. This plan also gives one a chance to see how much oozing is going to occur as a result of its use. Given at the end of an operation there is always a chance for concealed hemorrhage when the vessels fill.

The rectal route is usually reserved for postoperative cases. The continuous irrigation plan, recommended by Murphy, seems to me to be a distinct addition to our postoperative technic. It illustrates the principle alluded to when considering the subcutaneous route, that continuous absorption of small amounts will give better results than the effort to force into the circulation large quantities of fluid at one time.

Much more might be said on this subject, especially in the way of enumerating conditions where the use of this agent is not only unnecessary but harmful, but as the indications for its use have been quite narrowly defined, it seems a waste of time to discuss at length specific instances of its unsuitableness. I will, therefore, content myself with submitting for your consideration the following conclusions:

1. Physiologic salt solution is simply a fluid isotonic with the plasma of the blood.
2. Its field of therapeutic usefulness is in conditions which cause alterations in the quantity or quality of the plasma.
3. The quantitative alterations are chiefly those caused by hemorrhage and obstruction of the upper bowel. The qualitative alterations are those caused by the various toxemias.
4. The exact percentage of salt in the solution is important

and extemporaneous solutions are to be condemned, owing to the danger of hemolysis.

5. The subcutaneous tissue offers the most generally useful route for the introduction of the fluid. In emergencies the intravenous route may be chosen, while for postoperative use the rectum best answers the purpose.

6. Its use as an irrigating fluid in abdominal work has no particular effect in preventing adhesions and it is questionable whether its use to wash away pus, blood and débris has any advantage over dry sponging.

1013 FIFTEENTH STREET.

CHLOROFORM VERSUS ETHER AT COLUMBIA HOSPITAL FOR WOMEN.*

BY

TRUMAN ABBE,

Washington, D. C.

THE last few years have seen advances in the field of anesthesia as great as the advances made in any other branch of medicine. The local anesthetic has been developed from an injection of strong cocaine for a single incision, to a weak solution of cocaine combined with one or more adjuvants or replaced by any of a number of its allies, and efficient for a great number of minor and even major operations.

The technic of spinal anesthesia has become so improved that instead of being a danger it is looked upon by its advocates as the most satisfactory anesthesia in operations on the legs and lower portion of the abdomen.

The general anesthesia following the hypodermic injection of morphine and hyoscin, has been used not only to decrease the quantity of inhalation anesthetic but, under some conditions, as in obstetrics, to displace in large measure or entirely the inhalation anesthesia.

Recently there has been reported the production of narcosis in animals by the passage of an electric current through the brain. The first report is most attractive with the promise of no discomforts and no after-effects. When the current is turned off the animal promptly gets down from the table, and wagging his tail starts gnawing a bone. It has been tried only once

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in man and then in an incomplete degree but with no bad effect.

The number of drugs used for inhalation anesthesia has been increased, new combinations have been formed and old ones modified. But in spite of all these changes when the surgeon starts to explore on a major scale, he falls back on the friends, which have stood the test of a half century, chloroform and ether.

Yet ether and chloroform are not entirely satisfactory and must improve to hold their own against the new comers. The margin of safety between the dose of these drugs producing sleep with the abolition of the reflexes that interfere with surgery, and the dose that abolishes all reflexes in death is so narrow that the progressive surgeon seeks some other means of abolishing the reflexes that interfere with his work, while keeping active the essential reflexes of life. Again both of these drugs interfere so much with normal physiological functions that their poisoning in many cases is distinctly serious.

The features that we should endeavor to eliminate in anesthetics are:

1. The disagreeable features of administration.
2. Irritation of the mucous membrane of the air passages and the dangers of inhibiting the reflexes of respiration and of cardiac action during the anesthesia.
3. Postanesthetic poisoning as evidenced by nausea, vomiting, suppression of urine, nephritis, acidosis, and pneumonia.

The features of the time taken to administer the anesthetic, the bulk and the cost, are secondary in our usual hospital practice, though under such conditions as the naval surgeon or the army field corps has to contend with, they may form a consideration to be placed above the difference in the tissue changes produced by the drugs, and solely on those grounds, the choice may be in favor of chloroform.

Since April, 1905 practically all the anesthetics for surgical work at Columbia Hospital for Women have been given by Dr. Thomas S. Lowe and myself, this being the first instance in Washington, D. C., where a hospital has taken the anesthetics from the house staff and given it to experienced anesthetizers. The operators can testify to the advantages obtained. Some lessons learned seem worthy of mention.

The disagreeable features of the administration used to be greater with ether than with chloroform, but if ether is given by the drop method the percentage of ether vapor that the pa-

tient inhales being gradually increased so that it takes perhaps five to seven minutes to get to the point where pure ether vapor is inhaled, the patient will find the ether fully as agreeable to take as the chloroform, there will be little or no excitement stage, and the patient will be completely anesthetized in about twelve minutes. The classic Allis inhaler when properly used is practically a mask for the drop method of ether and is most satisfactory, probably better than the Esmarch. If the ether is preceded by nitrous oxide or ethyl chloride the anesthetization is certainly more agreeable and more prompt than with chloroform alone, and these adjuvants cannot be safely used with chloroform because of the marked depressant effects.

During the anesthesia the increased secretion of mucus is certainly a disadvantage of ether, though at times it occurs also with chloroform. It may be satisfactorily controlled by $\frac{1}{100}$ gr. of atropine combined with morphine and given one-half hour before the ether.

The dangers of respiratory and cardiac paralysis during the operation are most serious with chloroform and are much more marked than with ether.

In the last two years at Columbia we have had, during the administration of the anesthetic, one death from ether and one from chloroform. Both were from respiratory paralysis. The ether a late one, during an appendectomy following a double salpingo-oophorectomy, after the second hour of the operation; the chloroform an earlier one before the patient was put on the operating table. These accidents can only be avoided by careful watching, paying special attention to the efficiency of the breathing. Respiratory motions of the chest and abdomen do not always mean that sufficient air is entering and leaving the lungs.

In the case of chloroform it would seem that the dangers are due to the slowness with which the drug takes effect as compared with the more *volatile* ether, a position contrary to that generally advanced. The ether enters the blood and is eliminated much more rapidly than the chloroform, although a greater percentage of ether in the blood is necessary and to attain that more ether must be given. On the other hand chloroform is absorbed less rapidly and excreted more slowly than ether, and on account of the slowness of absorption and transmission of its effect to the central nervous system as soon as the patient begins to relax there probably is enough chloroform in the blood and on the mask to carry the patient to complete anesthesia. At that point

the chloroform should be withheld for one-half to one minute and then proceeded with more slowly. It took a number of cases of artificial respiration in the anesthesia room to teach me this, and that others have not learned it is evidenced by the teaching that the early stage of chloroform anesthesia is the most dangerous. The same late cumulative effect of chloroform is seen during the course of the operation. The patient reacts and is given more chloroform, even after he is quieted. Then the chloroform on the mask and in the blood overwhelmed his central nervous system.

Postanesthetic pneumonia may be due in part to the anesthetic, as in the cases of aspiration of vomitus or mucus, or drug, but most as many cases occur after local as after general anesthesia, so that there must be some other factor in their causation. Moreover, in some institutions these pneumonias are much more frequent than in others, although the same methods are used in anesthesia. There seems to be here little choice between chloroform and ether.

Postanesthetic vomiting has been held up as one of the great objections to ether.

At Columbia the records of 180 consecutive cases show that while chloroform is used in a larger number of short cases as well as on long ones, yet 65 per cent. of the same vomit, while with ether 62 per cent. vomit; not any distinct difference, but what little there is, contrary to the general idea, is in favor of ether. Moreover the most severe cases of vomiting have followed chloroform.

Postanesthetic nephritis has also been considered one of the most pernicious effects of ether, and chloroform has been advocated in cases of nephritis. At Columbia in this same series the percentage of nephritis, as determined by the presence of blood, albumen, or casts after anesthesia when they had not been present before, is after chloroform, 55 per cent. and after ether 45 per cent. This is contrary to the general teachings of textbooks, but in correspondence with recent investigations into the toxic effects of chloroform and ether.

A further effect of the anesthetic, showing a marked disturbance of metabolism, is the large percentage of cases, five of the 180, that show sugar in the urine after the operation. They occurred, one after ether, one after chloroform, and two after part ether and part chloroform. In the fifth case the anesthetic is not recorded but probably it was ether. While this

series does not show any difference between ether and chloroform, yet it seems worthy of comment. Perhaps it can be interpreted as an advanced stage of the acidosis that is now recognized as a consequence of anesthesia, due to perverted carbohydrate metabolism and oxygen starvation. We may have missed the earlier stages of acidosis owing to the fact that we have not been testing the postoperative urines for acetone and diacetic acids.

This series of cases seems to show that chloroform has little or no advantage in agreeableness to the patient if ether is given by the open method, and certainly none if the ether is preceded by nitrous oxide or ethyl chloride. Ether is safer, not only on the table but afterwards there being less vomiting and less kidney irritation than after chloroform.

Yet when it comes to a choice between chloroform and ether there are certain classes of cases in which some one factor will overrule the general objections to the toxemia caused by chloroform and give it the preference. For instance, in the cases of acute inflammation of the respiratory mucous membranes (coryza, laryngitis, bronchitis), the ether irritation, unless modified by morphine or atropine, is absolutely contraindicated, and chloroform is to be preferred. The same holds in chronic inflammatory processes that are liable to be lighted up by the irritation of the ether. One of the cases of this series died on the fifth day after the operation from pulmonary tuberculosis. The operation had been one for fibroids of the uterus, and the anesthetic ether.

Again operations on the air passages and mouth for the same reason call for chloroform. To allow the continuance of the anesthetic during operation in the mouth the small quantity of chloroform needed, and the fact that it can be supplied in sufficiently high percentage to continue the narcosis when administered on a bit of gauze or through a tube down the nares or mouth, is a most decided advantage in its favor. In diseased conditions of the blood-vessels the fact that chloroform lowers blood-pressure turns the choice in its favor. Thus chloroform is to be chosen as a rule in atheroma, especially in cerebral atheroma, and in aneurism, so, too, in plethoric and in alcoholic subjects.

In obstetrics the rapidity with which the patient is relieved of her pain leads to the choice of chloroform and the small quantity of it given makes it permissible. Even then it must be

remembered that small quantities of chloroform may produce a kidney lesion. Two cases of this series had casts in the urine after but half an ounce of chloroform. If in obstetrical cases the anesthesia is carried to a deeper degree, especially in eclampsia cases, ether is to be chosen not only to save the kidneys but to save the liver also.

In conclusion, one more factor must always be considered. As in every line of work, the outcome depends very largely on "the man behind the gun." While we recognize that all our anesthetics have some danger, yet the man who knows how best to use his anesthetic can make almost any case a safe risk, so far as the anesthetic goes, by putting the minimum strain on the patient's nerves and the minimum toxemia on his circulation; while the tyro may carry the strongest patient into serious danger even in a minor operation.

STONELEIGH COURT.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of January 14, 1908.

The President, E. B. CRAGIN, M. D., in the Chair.

DR. GEORGE GRAY WARD, JR., presented the following specimens:

FIBROMA UTERI SIMULATING CHILD'S HEAD AT TERM.

This specimen which I present was removed by me on October 24, 1907, from Mrs. M. S., aged forty-three years. Her mother died of cancer. She has been pregnant three times, but always miscarried. The first was eight years ago, the second was seven years ago, and the third was five years ago. Her menstruation had been regular but had been getting too profuse for the last six months. She has complained of no pain at any time. Throughout this time she had been under the care of her family physician who had been making biweekly applications to the uterus for "catarrh of the womb." Examination revealed a large, smooth, ovoid mass, filling the true pelvis, with a thinned out cervix stretched over it, the os being about the size of the tip of the examining finger. The first impression was precisely that of a fetal head at term with a commencing dilatation of the cervix.

The patient had a large amount of fat on the abdomen which further added to the deception. The history of the case and a careful search for the fundus, cleared up the diagnosis without difficulty. The hysterectomy was uneventful except that the growth was quite fixed in the pelvis, making it necessary to dissect off the bladder and the thin anterior wall of the cervix, and to rotate the mass on its transverse axis before it could be delivered out of the pelvic cavity. As can be seen the growth involves the lower segment of the body of the uterus, the fundus being of normal size, although studded with small fibroids. The thin cervix has been partly removed in the dissection and the remainder has contracted up over the growth since being placed in the formalin solution, and the whole specimen has shrunk considerably. The appendix was removed as it showed evidences of chronic inflammation. The patient made an uneventful recovery and was out of bed on the tenth day.

MULTIPLE FIBROMYOMA OF THE UTERUS; SUPRAVAGINAL HYS-
TERECTOMY; VIRULENT STREPTOCOCCUS INFECTION; DEATH
IN TWENTY-SEVEN HOURS.

This specimen which I present was removed by me from a colored woman on December 6, 1907, at the Post-Graduate Hospital. Mrs. M. D., aged fifty-three years, widow, and a cook. She had one child thirty years ago. About fourteen years ago she was operated upon by the late Dr. Hanks at the Woman's Hospital for an ectopic pregnancy in the left tube. She had been perfectly well until about four years ago, when she began to suffer from menorrhagia and metrorrhagia which had increased very much of late, the flow lasting more than two weeks with numerous clots. She had pain in the left side and back and down the left leg, especially while flowing. For the past five years she had noticed an irregular mass in the lower abdomen. Examination showed an irregular, nodular uterus about the size of a four months' pregnancy. The cicatrix of the previous operation was very thin and extended from the symphysis to two inches above the umbilicus. The patient was anemic, as might be expected, but she was of good strong physique, being tall and muscular, and was able to do her daily work as a cook without great fatigue. On opening the abdomen dense adhesions of the ileum were encountered. Two loops of the gut were adherent to the abdominal wall and the old cicatrix, and one loop to the side of the uterus. The whole width of the omentum was adherent to the abdominal wall and the scar. These adhesions were so dense and strong that they could only be separated by cutting with scissors or knife. Evidently the patient had had a severe peritonitis following the operation fourteen years ago.

Great difficulty was experienced in dealing with the adherent loops of intestine, but the gut was not materially injured, the adjacent tissue being cut through and left adhering to the wall of the bowel. In two places where the peritoneal coat of the bowel has been stripped, it was replaced and sutured with silk.

The fibroid uterus was removed without difficulty, the cervix, which was small, being cut through just below the internal os, the usual precautions being observed, and the canal being cauterized with pure carbolic acid as is my custom. The peritoneum was sutured over the stumps of the broad ligament and cervix in the usual way. The abdomen was filled with hot saline solution and the abdominal wound closed. The time of the operation was one hour and thirty minutes, most of the time being consumed in dealing with the adhesions. Rubber gloves were used and the aseptic technic differed in no way from that of a properly conducted laparotomy throughout. The patient left the operating room with a pulse of 80, respirations of 32, and a temperature of 99°, and was in an unusually good condition.

At 8 P. M., about eight and a half hours after the operation,

her pulse was 96, temperature 100.2° (rectal), and respirations 26.

At 2 A. M., pulse 96, temperature 101° , respirations 32.

At 6 A. M., about eighteen hours after the operation, her pulse suddenly rose to 140, temperature was 102° , and respirations 68. At noon pulse was 140, temperature 105° , and respirations 52, and she was evidently in a dying condition. At 3.30 P. M. or about twenty-seven hours after the operation she was dead.

On first thought the sudden rise of pulse made one think of internal hemorrhage, but a careful examination of the patient could elicit no symptoms confirmatory of that diagnosis other than the rapidity of pulse. Vigorous stimulation was resorted to and an intravenous infusion was given as well as saline enemata but it was only too apparent that it was useless, as edema of the lungs rapidly supervened. Fortunately I was able to obtain an autopsy.

On opening the abdomen a large quantity of sero-purulent fluid flowed out of the incision. Smears of this fluid were made.

The following is the report of the microscopical examination made of this fluid and of the cavity of the fibroid uterus by Professor Brooks, and of the autopsy, viz.:

"Microscopic examination of the sero-purulent fluid removed from the abdominal wound of the negress, M. A. D., Dec. 7, while the corpse was still in bed, showed numerous streptococci. Subsequent microscopic examination of the bloody mucoid secretion between the small submucous fibroids within the uterus showed the same coccus.

"*Autopsy*.—M. A. D., f. negro, Dec. 7. Large frame, symmetrical, well developed, well nourished. No rigor mortis in two hours.

"*Skull and brain* not examined.

"*Heart*.—Pericardium normal, very slight amount of fluid. Epicardial fat increased and extending into muscularis. Mitral valve admitted two fingers easily, slight thickening of valve flaps. Aortic valve admitted only one finger—a slight stenosis with a little thickening of flaps. Beginning of aorta shows large atheromatous areas. Some sclerosis of coronary orifices. Right heart normal.

"*Lungs*.—Crepitant, slightly edematous and congested. Small healed tuberculous areas in left apex. A few old adhesions at each apex. No fluid in pleural cavity.

"*Liver*.—Free border one finger below ribs in mid-axillary line. In nipple line reached lower edge of ribs.

"*Kidneys*.—Right: Capsule slightly adherent and connective tissue increased. Left: Capsule slightly adherent, cortex thinned and connective tissue increased. Ureters normal.

"*Wound* from two inches above umbilicus to three inches below and just to right of mid-line. No evidence of inflammation or healing and sutures in position. No evidence of hemorrhage in external wound or in peritoneal cavity. Visceral and parietal

peritoneum slightly cloudy. Coils of intestine bathed in pinkish-gray fluid and covered with slight exudate. In upper part of ileum two recent repairs of intestinal wall with stitches in place. A few hemorrhagic spots found on small intestines. Omentum adherent to old laparotomy wound just to left of mid-line and below umbilicus. Stomach and large intestine and appendix normal.

"No evidence of any old abscess cavity.

"Anatomical diagnosis, acute generalized peritonitis, edema of lungs, chronic parenchymatous nephritis, slight aortic stenosis."

On first opening the abdomen the large quantity of purulent fluid which was evident made Professor Brooks and the onlookers think that possibly some old abscess cavity had ruptured, probably in the region of the liver. As the report of the autopsy shows, no such abscess cavity was found, nor was there any visible focus of infection to be discovered in the abdominal cavity. Examination of the interior of the intestines showed them to be intact and in no way injured by the separation of the adhesions. There was not a particle of hemorrhage in the abdomen. The finding of pure streptococci in the uterine cavity similar to that found in the free fluid in the abdomen, leads Dr. Brooks to believe that in all probability the infection occurred in severing the cervix. There was also a possibility of the infection having come from under the adhesions on the peritoneal surface of the uterus. The point of interest in this case is the intense virulence of the infection, the toxic element being of such power as to rapidly produce a purulent fluid throughout the abdominal cavity and to cause death in about twenty-seven hours after the operation.

Kelly (*Operative Gynecology*, Vol. II, p. 84-85) reports a case in which the patient had a similar postoperative history and died in about twenty-four hours, but in this case the abdomen was reopened as the possibility of secondary hemorrhage was feared. No hemorrhage was found and the abdomen was irrigated and drained.

The case I report is a typical one of what may be rightly called "fulminating septic peritonitis," the most fatal of all forms. The streptococcus pyogenes is almost always the cause as it is the most virulent of all ordinary microorganisms.

In these cases the germ multiplies with such rapidity and its toxins are absorbed so speedily, that the patient is overwhelmed and dies as though suffering from shock. The vital resistance of the patient was necessarily low from long-continued menorrhagia, and the difficult separation of dense adhesions contributed to the lowered resistance, and the patient was thus rapidly overcome by the virulence of the infection.

The source of the infection must come under one of three heads, viz.:

First. From introduction of septic germs from without through some faulty technic in asepsis.

Second. From injury to the intestinal wall, allowing escape of infecting material.

Third. From liberation of infection during the course of the operation, as from walled off pus collections or from an infected tumor.

In this case I believe we may exclude the first source, as the operation was done with all the advantages of trained assistants and a modern operating room. The second source of infection we can positively exclude as the autopsy proved. The third source, which might be termed auto-infection, is in all likelihood the one responsible here as the pure streptococcus was demonstrated in the uterine cavity.

Whether a complete hysterectomy instead of a supravaginal operation would have obviated the contamination of the peritoneum is an interesting thought.

DISCUSSION.

DR. J. O. POLAK.—I should like to inquire the condition of this patient's blood state prior to operation. Two years ago I had a case similar to Dr. Ward's, dying in thirty-six hours after the hysterectomy. In that case the hemoglobin was 33 per cent.; there were few adhesions. It was a very simple hysterectomy for a large interstitial fibroid. The stump was treated in the same way but the cervix was sterilized with the actual cautery. That patient came off the operating table at about 2.30 P. M. and at night she had a temperature of 103. The following morning the temperature was 106, and the pulse had risen to 160. She died in thirty-six hours after the operation. The morning following the operation, I made a cul-de-sac incision and emptied about one and one-half quarts of this sero-purulent fluid, which developed streptococci cultures. The blood examination was interesting, because there was no leukocytosis at all, but a very high polynuclear count, 91 per cent, with practically no defense on the part of nature. The autopsy on this patient gave practically the findings the doctor spoke of; notwithstanding the drainage of over a quart of fluid by the vaginal incision she died about 12 o'clock the same evening. The autopsy was done very promptly after that, and the abdomen was found to contain a very large quantity of sero-purulent fluid, containing innumerable streptococci. There were no adhesions.

DR. HIRAM N. VINEBERG.—We occasionally come across such a case, though rarely one that is quite so virulent. How to trace the infection afterwards seems to be almost impossible. My only object in getting up is to take exception to the theory or view which Dr. Ward expresses that the infection was due to supravaginal amputation of the cervix. I should first think of the catgut. I should think of what took place in the operating room the day before, and numerous other sources of possible infection. I know when we first opened the new Mount Sinai

Hospital, we found that we had quite a few cases of virulent infection. Investigations were made, and it was finally found the only reasonable explanation was we were doing a great deal of work, doing pus cases in the same operating room where we were doing clean cases. Since this was changed, we have no more inexplicable cases of infection.

I think another thing which must be considered even more than the injury to the intestinal wall is the injury to the mesentery. If the mesentery was injured, that, of course, as we all know, would very rapidly be followed by peritonitis and the streptococci which frequently exist in the intestinal tract could set up a streptococcic infection. I never think of cauterizing the cervix, and I have never known of any bad results from not doing so. I have sometimes had a very slight infection in the cervical stump, from probably tying my sutures in the cervix too tightly. The process always remained localized and at the worst a small abscess might form. I don't think much importance can be attached to the finding of streptococci in the mucosa of the removed uterus which undoubtedly was not examined until the case proved fatal. I would like to know what precautions were taken to prevent contamination of the specimen from the time of its removal until the examination was made.

DR. ABRAM BROTHERS.—In connection with the recent appointment to a young hospital in the city, I found that two cases, which would ordinarily get well, passed off with this form of peritonitis, and immediately insisted upon calling a meeting of the Board, and have every item of asepsis gone over. I called attention to the fact that visitors were admitted commonly to our wards, situated near the operating table, as the cause of the danger, and although I am pretty sure of my own asepsis and my assistants, and the boiling of the instruments, I had reason to doubt the other surroundings. These things were improved and since then the results have been satisfactory.

As to the question of removing the cervix after the hysterectomy, I never cauterize the stump of the cervix; I simply sew over it. I have never seen this form of peritonitis follow that operation. As to the question whether it would improve the patient's chances by removing the cervix, I will say that even that will not always save the patient. If the peritoneal cavity is already infected, the removal of the uterus will not always save that case. I had a woman with, I think, abortion self-induced, brought in in a septic condition. In that case I removed the uterus, and that patient died from progressive peritonitis of this type. Once you get the streptococci in the peritoneal cavity, I have my doubts about saving the patient.

DR. GEORGE T. HARRISON.—I think this is an exceedingly interesting case of Dr. Ward's. However, in regard to supra-vaginal amputation, I take ground with Dr. Vineberg. Whenever I can save the cervix, I do so. I never have had any cause

yet to regret leaving the cervix and all the vaginal portion. The old-fashioned way of cauterizing the stump we now know was absurd. There was no reason for it. It was called into play from a *priori* reasoning alone.

A few years ago I had a patient who two days after the operation, under circumstances similar to those described by Dr. Ward, developed streptococcus infection. I operated for sarcoma of the uterus. Now in that case, I could exclude auto-infection decidedly. I know exactly how the patient died. She died by the hands of my assistant. He was attending a patient with the worst form of septic infection of the arm—a male patient—dressing that wound daily, and was knee deep in streptococci.

I am always loath to accept the theory of auto-infection. In some of these cases undoubtedly there is no way of attributing the infection except in that way of invasion, but I think we had better look in every direction before accepting that as the *ultima ratio*.

DR. HENRY C. COE.—I am inclined to agree with Dr. Ward that the infection may have come from the uterus. I always guard against escape of fluid in severing the cervix and cauterize the canal. The case seems to furnish an argument against hysterectomy for puerperal septic endometritis, on account of the risk of infection of the peritoneum.

Of course one always revises one's technic in a fatal case and tries to find the possible source of infection, though it often escapes us. It has been my misfortune to have two fatal cases of tetanus following laparotomy, a year and a half apart, both in private patients, and the operations were preceded by others in which the patient made a good recovery. I could never discover how the tetanus germs were introduced. It is difficult to explain the virulent nature of the infection in the case reported.

DR. RALPH WALDO.—Whenever we perform hysterectomy there is more or less infection, especially if the uterus is cut across, because, no matter how well your patient is cleaned, no matter how clean the operating room, the dressings and the assistants, the uterine cavity is seldom clean. The fact is, it is almost impossible to sterilize a woman's vagina.

I have performed hysterectomy after three methods:

1. Removed the entire uterus and sutured the peritoneum across from one broad ligament to the other.

2. Removed the entire uterus and left an opening an inch in diameter at the upper end of the vagina leading into the peritoneal cavity. A drain was allowed to remain in this opening for five days.

3. Supravaginal amputation was performed, a portion of the cervix allowed to remain and the peritoneum closed above.

After all the above methods my patients did well; but where drainage was used they had less temperature and convalescence was generally better. A few germs in the peritoneal cavity

will have very little chance of doing harm, providing there is no accumulation of serum or blood to act as a culture medium, and a drain will prevent this accumulation and so very materially lessen the danger of the development of a serious peritonitis.

DR. HIRAM N. VINEBERG.—May I ask Dr. Coe just what he meant by a blow to hysterectomy? For puerperal septic endometritis I fail to see the analogy between a case of supravaginal amputation of a fibroid uterus which is followed by an inexplicable virulent infection and a total hysterectomy which is done for a puerperal septic uterus.

DR. HENRY C. COE.—Replying to Dr. Vineberg's question "May I ask Dr. Coe just what he meant by a blow to hysterectomy." I meant that it was exceedingly difficult to prevent general infection by the escape of virulent material from the uterus.

DR. GEORGE GRAY WARD, JR.—To the question Dr. Polak asked in regard to the blood examination, I am sorry I cannot give him any accurate answer. The blood examination was made, but there was nothing in it to attract attention. There was no leukocytosis, except the condition of anemia, and the polynuclear percentage I cannot tell him. There seems to be a difference of opinion among the gentlemen as to the danger of cutting across the cervix. Some of the gentlemen think it is a pretty dangerous thing and others do not. The fact that we found streptococci in the uterus and the mucous secretions looks to me as though the infection was there, and therefore it was dangerous to cut across the cervix in that particular case at any rate. I recognize the importance of all that Dr. Brothers has said in regard to the likelihood of there being some error in the aseptic technic. We can only look back and criticize the conduct of the operation as severely as possible and in this particular case there were no septic conditions or errors that we could find. The case was operated on in the morning at 10 o'clock. Nothing else had been done that day. In the subsequent operations done within a few days, there was no sepsis. The operating room nurses had been there some time, but, of course, we are more or less at the mercy of the nurses. We cannot tell with certainty whether any of the nurses connected with the operation have been the inadvertent cause of sepsis. They all wore rubber gloves in this case, and so far as we could tell, there was no slip in technic. The catgut used was Van Horn's catgut.

DR. RALPH WALDO reported a case of

RESTORATION OF THE NECK OF THE BLADDER AND URETHRA.

Mrs. P., age thirty-six, married two and a half years. One child, December 25, 1906, a severe forceps delivery. Labor lasted thirteen hours. Was confined to bed seven weeks following. There were no other pregnancies. Following this childbirth she was unable to retain her feces or urine.

On entering Lebanon Hospital a complete laceration of the perineum was found extending about two inches up the posterior vaginal wall. There was also complete destruction of the urethra and neck of the bladder, leaving an opening sufficiently large to allow of the easy introduction of two fingers into the bladder.

April 23, 1907, I operated on the neck of the bladder and succeeded in diminishing the size of the opening so as to allow the passage of a Number 10 male sound. This resulted in partial control of the urine especially when in bed.

Oct. 31, 1907, with ether narcosis and the patient in Sims' position, flaps of the mucosa from either side of the former urethra were dissected up and attached to each other with five fine catgut interrupted sutures. The upper end of the canal thus formed was sutured with interrupted catgut sutures about the opening leading into the bladder. During this entire procedure a Number 10 male sound was held by an assistant in the opening leading into the bladder and over the site of the former urethra. A flap the thickness of the mucosa and the entire width of the denuded surface was dissected from the anterior wall of the vagina extending from the opening in the bladder upwards. The upper end of this flap was not detached. This entire flap was drawn down so as to cover the newly formed urethra and the denuded surface at either side of it and held in place with fine interrupted silkworm gut sutures. Sims' block tin catheter was passed through the new urethra into the bladder and allowed to remain for four days. Each day the catheter was removed, cleaned, and again introduced.

Nov. 10, 1907, the silkworm gut sutures were removed. There was perfect control of the urine, it being passed once during the night and once in from two to five hours during the day.

Nov. 27, 1907, it being twenty-seven days after restoration of the urethra, there was perfect control of the urine. She voided it voluntarily once in from five to seven hours.

The important elements that contributed to this result were:

1. Large thick flaps.
2. Very slight tension on the flaps.
3. The urethra was composed of two layers.
4. Use of Marion Sims' block tin catheter.

For the accompanying diagrams I am indebted to Dr. Milton R. Bookman, house surgeon of Lebanon Hospital.

DR. WILLIAM S. STONE.—I reported a similar case to the American Gynecological Society two years ago. The entire urethra was gone, and a very much larger part of the bladder than in Dr. Waldo's case. The methods of procedure were practically the same. The main point, I think, is in dissecting away enough of the tissue to get a flap which will come together without tension on the sutures.

DR. RALPH WALDO.—I think Dr. Stone's statement there is

absolutely correct, and that is what I intended to bring out, that the flaps were very thick, and they were drawn down so that there was no tension, and I think the use of the block tin catheter device of Marion Sims is by all odds the best method of draining the bladder. A rubber catheter is very apt to hurt an otherwise successful operation.

DR. H. N. VINEBERG read the report of a case of

ECTOPIC PREGNANCY WITH HEMORRHAGE FROM THE RECTUM.*

DR. H. N. VINEBERG also reported a case of

PRIMARY TUBERCULOSIS OF THE VAGINAL PORTION OF THE CERVIX.

Miss R., aged twenty-five years, was brought to my office by a relative on May 30, 1907, to ascertain the cause why she had never menstruated. She had never been ill and her symptoms, apart from the absence of menstruation, were a rather profuse leukorrhea and occasional attacks of pain in the right groin from which she had been suffering for over two years. Her general health was good and there was no history of any hereditary taint. She was rather undersized and below the average intelligence. The growth of hair upon the labia and mons was normal. The external genitals were unusually well developed. The clitoris was large, and the nymphæ moderately hypertrophied. (She denied masturbation very positively.) Hymen was intact. Examining with the finger, the cervix was found to be soft and velvety to the touch, the body of the uterus rather small and acutely anteфлекed upon the cervix. The manipulation of the cervix brought on some bleeding. Visual inspection with a small speculum demonstrated the vaginal portion to be covered with large highly vascular granulations which bled rather freely on being touched. A suspicion of malignant disease was entertained. The patient entered Mount Sinai Hospital June 12. On the fifteenth, after she was narcotized and prepared for operation, the granulations on the cervix did not impress me as being of a malignant nature but rather the effect of a marked endocervicitis. The uterus was dilated and curetted. Attached to the right wall of the cervical mucosa at about the junction of the internal os, was a small cyst the size of a cherry. This was excised and was found to contain sebaceous material, not unlike that found in dermoid growths. Unfortunately, a microscopic examination was not made of the cyst wall or of its contents. The vaginal portion of the cervix was amputated in the usual way. The excised cervix was sent to the pathological laboratory and the report returned in a few days stated, to my surprise, that it was tuberculous. While the patient was under narcosis a thorough examination of the pelvic cavity was made. The adnexa were not thickened and nothing abnormal was detected. The patient has been repeatedly examined by me since the operation up to

* See original article, page 527.

the present date. The cervical stump healed promptly and has remained healthy, and there has not developed any physical sign of disease of the uterine body nor of the adnexa. It is, therefore, safe to assume that we had to deal with a case of primary (in the ordinary acceptation of the term) tuberculosis of the vaginal portion of the cervix. That is, there were no evidences of tuberculous disease of the adnexa nor of the peritoneum. This fact excludes the assumption that the process in the cervix was secondary to tuberculous disease of the pelvic organs. But even this does not fulfil the requirements laid down by Amann (see article by the writer in *American Gynecology*, October, 1903) to establish the existence of a primary tuberculous disease in the female genitals. To do that would necessitate a very searching autopsy.

When I wrote the article in 1903 I was able to collect only twelve cases of primary tuberculosis of the cervix. Of these only four cases, those of Friedlander, Kaufmann, Fränkel and Spaeth, are accepted by Amann as genuine, that is they fulfilled all the requirements insisted upon by him. The process was found at autopsy and no tuberculous lesion was found elsewhere.

A pretty thorough search of the literature since then has disclosed ten cases (Mally, Kynoch, Gummert, Brook, Lewers, Croft, each one case, and Ferrari four cases). All of these were clinical cases only, with no evidences of tuberculous lesions elsewhere than that in the uterus. There were eight additional cases of tuberculosis of the cervix, but they were all associated with tuberculosis of the adnexa, and two with pulmonary tuberculosis. In seven of the ten cases the uterus was removed by vaginal hysterectomy and in one by the abdominal route. The adnexa were apparently healthy in all of these cases. In two cases only an amputation of the diseased cervix was performed. In one of these cases (Ferrari) the future of the patient is unknown. In the other case (also Ferrari) the patient was well when examined a year after the operation. In the eight cases in which the uterus was removed a slight tubercular affection of the corporal endometrium was found in four cases. The corporal endometrium was free from disease in three cases and in one case no mention is made of the condition of the uterus.

It is interesting to note that in most of the cases the uterus was below the average development, as evidenced by sterility, scanty menstruation with long intervals of amenorrhea, and by the nonestablishment of menstruation as in my case.

In the article referred to I stated: "In view of the tendency of local tuberculosis to undergo spontaneous cure under favorable conditions it may be wise in mild tuberculosis of the uterus to first make a trial of a thorough curettage, to be followed by suitable hygienic treatment. The local conditions should, however, be carefully watched, and on the return of hemorrhage or enlargement of the uterus a radical operation should not be too long deferred."

The experience gained in the case just reported and the history of a couple of the cases found in the literature since 1903 would strengthen the view I then expressed.

Consequently in a given case presenting the clinical evidences of primary tuberculosis of the cervix a radical operation is not imperative. Excision of the diseased cervix with a curettage of the endometrium of the body might be all that would be required. I say this even in the light of the knowledge that in 50 per cent. of the foregoing cases the corporal endometrium was also involved. But there are several cases recorded of tubercular affection of the endometrium in which a permanent cure was effected, as far as the knowledge of the observer went, by a thorough curettage. Of course, it need scarcely be added, that the patient should be kept under observation for a long time, and that as soon as there is any manifestation of a return of the disease a radical operation should be done.

DISCUSSION.

DR. HENRY COE.—The first specimen is one of great interest. The theory of internal migration of the ovum seems to be supported by the facts. I presented a specimen to the American Gynecological Society several years ago in which a recent and old pregnancy existed in one tube, the corresponding ovary being atrophied, while the opposite tube was a pyosalpinx and the ovary contained a corpus luteum.

As to the rectal hemorrhage, I think that it might have been explained by intense congestion due to the presence of the adherent mass, in the absence of any direct communication between the gut and the sac.

DR. RALPH WALDO.—Referring to the migration of ova: I had a very interesting case where I removed an ovary on one side and left that tube, and on the opposite side removed that tube and left the ovary. The patient became pregnant and gave birth to a child.

DR. HARRISON.—I am inclined to accept the interpretation that Dr. Vineberg puts upon it. I do not see why it could not be explained without rupture. I think it is due to the erosive action of the trophoplast. If this trophoplast is in contact with the intestinal canal, why should not that erosive effect produce that result?

DR. H. VINEBERG.—Dr. Coe has just asked me to explain why we did not find an opening of the gut. I am rather surprised at the question.

We very often find when opening the abdomen for ectopic pregnancy, a considerable quantity of blood and still the tube macroscopically will show no point of rupture or signs of a tubal abortion. The opening caused by the eroding qualities of the villi in these instances, is either so small as not to be visible to the naked eyes, or the continuity of surface has been closed in by a small plug of fibrin. This is so well known and recog-

nized that I am sure the question was asked without due thought. Therefore my not finding the minute perforation of the bowel does not in the least militate against the views I have expressed. On the other hand it would be inexplicable to me, how a small mass not as large as a hen's egg, and not pressing against the rectum, but being simple adherent to the upper portion of the sigmoid would cause such congestion of the rectum as to give rise to attacks of copious bleeding.

DRS. VOORHEES, McLEAN, and POMEROY read papers on

DISPROPORTION BETWEEN THE FETAL HEAD AND THE MATERNAL PELVIS AND ITS MANAGEMENT.*

DR. WILLIAM S. STONE.—It seems to me that Dr. McLean's paper is a very good illustration of what a great many of us do—we do not practise what we preach. My impression of his paper up to the time he recorded his case is that it was a very difficult matter to tell about the relative size of the fetus and the pelvis, and that there were a great many cases in which we interfered too early with fatal results either to the mother, or to the child. When he reported his case, however, he showed a careful examination was made. He gives all the points of that examination, and that, coupled with his long experience, enabled him to judge correctly of the relative size of fetal head and pelvis. It seems to me it was an exact contradiction of what he had expressed in his paper—that is, it was based on good physical signs, interpreted from the light of his past experience.

It seems to me that an erroneous argument that is too often used in obstetrics may be illustrated in the case of a doctor's wife I attended. She had all the premonitory symptoms of eclampsia, but she had not had any convulsions. She was at full term. I told the doctor I thought we had better terminate the pregnancy, and he asked me if I could guarantee, if we did allow her to go on, that she would have convulsions? It seems to me that is an argument that is followed in obstetrics more than in any other branch of medicine. For one, I believe that there is a great field for more careful work in determining the relative size of the fetus and the pelvis.

The point that Dr. Voorhees made that every day the patient goes over term, look for trouble, is a very important one. I think this going over term is responsible for so many distressing results in primiparæ in private practice. It is our duty not to allow so many of these cases to go over time.

DR. J. CLIFTON EDGAR.—Dr. McLean's paper is a conservative one. It seems to me that there are just three factors in these relatively contracted pelves of what might be termed the first degree, that we have to face. One is the condition of the membranes; another the condition of the cervix; another the dynamic power of the patient. If we have the membranes intact, a great

* See original articles, pp. 511, 516, 519.

deal is in our favor. If we have a cervix easily dilated, we have still more in our favor. Then again, if we have good strong pains to back these conditions, we have the best clinical picture. If we have early rupture of the membranes, we are in trouble. If we have lack of strong pains in spite of stimulation, we have a condition of affairs for which we must interfere.

I think we have made a long step forward here to-night in listening to the paper of Dr. Pomeroy and his report of a case of section of the pelvis. I think it is a beautiful illustration of what can be done in cases, the clinical index of which is in the neighborhood of nine centimeters. It may be the same problem we have to face, where the head does not engage, because of a rather large child. Personally, I shy at the operation because of a large experience with symphysiotomy. I do not refer to the mortality, but to the morbidity. It goes against the grain to pass behind the pubes and open the venous vessels about the pubes and the larger labia. Still, here we have a case on the fourteenth day, postpartum, and she has made a good recovery. Those of us who have seen the dreadful morbidity with mild sepsis of symphysiotomy compared with the suprapubic section, naturally lean toward the suprapubic operation. Two weeks ago I had to face such a problem at Bellevue. It was apparently a typical case for the section of the pubes, still I did a suprapubic section.

I am in accord with practically all the statements that Dr. Voorhees has made. I am a believer in the induction of labor, but not before the thirty-sixth week, and I do not believe it promises much when the pelvis is clinically anything under eight centimeters. I take issue with the statement of Reynolds that it is practical to manually dilate the cervix and then introduce the forceps as a tentative procedure. We are rupturing the membranes early and we have not the advantages of moulding, and we cannot say whether the head will or will not engage in such cases.

I have a horror of an after-coming head in these relatively contracted pelves. There is no moulding and it has to be gotten out in eight minutes or we will lose the child. There is a great field in the induction of labor in these pelves. I do not believe, if the statistics are kept properly and we do not allow the patient to go until the last moment, that the mortality will be so high. Take a case of elective Cesarean section—we often operate two or even three weeks before the two hundred and eightieth day, and yet we hesitate to put in a bag before full term although we do an elective Cesarean section before the 280 days.

DR. HENRY C. COE.—These cases resolve themselves into two distinct classes—hospital cases and those in private practice. I was talking to a physician from Boston some time ago and he spoke of the frequency of Cesarean section in private practice in that city. I told him that we are rarely permitted to perform the operation in New York, except in hospitals.

It is a very different matter to control these cases when a patient is under observation from the beginning or middle of pregnancy. We should always insist in this course and induce labor about two weeks before term if there is marked disproportion between the fetal head and the pelvis.

It is not a pleasant prospect to be called to deliver a woman who has been in labor say for many hours with the liquor amni drained away, the head impacted at the brim and the patient exhausted by prolonged traction with high forceps. I had occasion recently to discuss a paper giving the results of 100 cases of Cesarean section in a hospital in this city. I was obliged to confess that the operation had become far more common than it was a few years ago and I wondered where they all came from.

I agree with Dr. Edgar that we are very apt to do Cesarean section as an elective operation in some cases in which we only think that the patient will not deliver herself. I recall one in which a section had been done with the former labor, and the attending physician found that it was again indicated, but as the pelvic measurements were normal and the head had moulded I advised noninterference and the woman was delivered easily a few hours later. I was never able to learn why the former operation had been performed. There is an element of uncertainty as to the moulding of the fetal head and the softening of a rigid cervix.

How common it is to find a rigid cervix with nagging pains and a few hours later after giving an injection of morphine and atropine to see a complete change in the situation! I am perhaps more conservative in obstetrics, than in gynecology and I must confess I do not favor artificial dilatation of the cervix during a normal labor, when nature is doing so much better than art can do.

DR. CHARLES JEWETT.—Dr. McLean has enumerated the factors upon which the prognosis of labor depends. One important factor of which he omitted to speak is the strength of the pains. Owing to insufficient pains we are often compelled to resort to operative delivery in cases in which moulding has made little or no progress.

Premature labor, I think, still holds an important place in obstetric surgery. The figures of its opponents are unfair to the operation. They make no distinction between early and late operations. When interference can be postponed till within three or four weeks of term the fetal mortality is *nil* or very nearly so.

Concerning the Cesarean operation, Dr. McLean's paper is a good argument for the plan of waiting in borderline cases to try what nature may do before resorting to section. I would not, however, approve the suggestion of Dr. Reynolds, for the results in Cesarean section, as we all know, are good only when there has been little or no previous manipulation within the birth canal.

As to the choice between the Cesarean operation and pubic section, median or extramedian, the latter, I believe, is still to be

preferred in certain cases in which the woman's condition is such that she is not likely to bear a peritoneal section.

In eight symphysiotomies my results for the joint were all good. Only one of the women was lost and that one from causes not due to the operation. The chief objections to symphysiotomy are its very narrow field and the prolonged and tedious after-care.

For hebotomy it is claimed that the risk of infection is less than in the symphyseal operation and that there is less danger of injuring the attachments of the bladder. Yet in several instances, as in the case reported before this Society some months ago, crural phlebitis has followed and in several of the reported cases the anterior soft parts have been torn through. One case in the hands of an eminent operator was lost by hemorrhage. I am free to say that I can see little to choose as between symphysiotomy and pubiotomy.

In two cases since the Gigli operation, cases in which I might have delivered by pubiotomy, one of them a few days ago, I did Cesarean section.

DR. ROBERT L. DICKINSON.—Dr. Lusk once said to me, "I think when I am a year older and a year braver, I will induce labor in every primipara at eight and one-half months." I have been attempting ever since to argue back to that. In every woman in whom I feared a child disproportionately large, or a cervix unduly rigid, I have tried very often under the guise of an innocent examination to start the ball rolling. This applied particularly in cases of disproportion. It is a great satisfaction to see the honest obstetrician admit the terrors of that operation called "high forceps." As I have said before, my own pelvic floor damages in high forceps have ranged in the region of 110 per cent., and it is a big piece of surgery and a very dangerous thing for the child. We cannot omit reference, also, to the not inconsiderable late results: cerebral lesions or minor hemorrhages that do not kill the child at once. My own preference is induction of labor a couple of weeks before term. Early delivery is everything, and my strong dread of high forceps is only exceeded by my dread of the difficulties of version.

DR. GEO. T. HARRISON.—The subject is so large I can only touch upon one or two points. I agree with Dr. Voorhees, Dr. Dickinson and other speakers in regard to the great value of the premature induction of labor, especially when the patient goes beyond term, but I am not in accord with those gentlemen who have in very curt manner thrown aside version. It is the greatest mistake that can be made to speak lightly of one of the most important obstetrical operations. There were in my office this day, two young women, the daughters of a woman who gave birth to eight children. I attended her in all her labors. She had one of these deformed pelves, a simple flat pelvis. The obstetrical writers all say that a contracted pelvis is common in Europe, but not in this country, but since the deluge of foreigners

we see them often enough now. I delivered those eight children, every one of them, but two by version, and every one of them living. This was just an example of the hundreds and hundreds of cases in which I have done the same thing. If there is anything that I do deplore, it is the application of high forceps except under very rare conditions, and I consider, as a general rule, the application of high forceps in these cases where the head has not engaged, as wrong in principle, and especially in the hands of men who are not experts—it is the worst practice that can be conceived.

I know in one case, a gentleman, formerly a member of this Society, now dead, had to tackle a narrow pelvis and a disproportion between the head and the superior strait. Now the gentleman that called him in consultation said to him, "Don't you think version is indicated here?" and the answer was, "No, I am not familiar with version; I prefer the high forceps." He pulled the scalp off that child's head; I think it was the most dreadful sight; when the deformity was exhibited after child-birth. I was called in after this gentleman had been struggling with this case all night, and had left for breakfast. Meanwhile, the family doctor came back and met me and said, "Doctor, the gentleman whom I had in consultation said I must not wait for his return, but as soon as Dr. Harrison comes, to go to work." I did not see the patient. She overheard the conversation. This doctor then said to me, "Will you examine the patient first, or shall I give ether?" Said I, "Doctor, give ether!" The woman in the adjoining room heard it and said, "Thank God, there has one sensible man appeared on the scene!" Well, I delivered that case by version; it was a very difficult one. That is one of the great difficulties I have encountered. These men have tried high forceps and I have had the devil's work to do to deliver the child by version. As for the statistics of it, I would not as a matter of fact, give one cent for all the statistics on earth as a rule. I think Dr. Jewett made a very good point in this regard.

I must speak one good word for version, because in my hands it certainly has been by all odds the best method of delivery, so far as my personal experience goes, in that case in which it is indicated.

DR. GEO. BRODHEAD.—The keynote of Dr. McLean's paper is conservatism, and I think his point is extremely well taken. As Dr. McLean has stated there can be no question of the very grave danger attending the high forceps operation. Time and again we are called in consultation to see these patients where the head remains above the brim after hours of labor, but still many of these women will deliver themselves. I am very glad it is the consensus of opinion in this Society that the high forceps operation should certainly be postponed until we are absolutely sure that the woman cannot possibly deliver herself.

Dr. Pomeroy's paper was most interesting. I confess I have

not yet had the opportunity of doing a pubiotomy, and yet in his case, if he had not done so, he would probably have lost the child. I think he will agree with most of us in the choice between pubiotomy or symphysiotomy and Cesarean section, for the after-treatment of section cases is easier to carry out and the fetal mortality is practically *nil*, while at the same time the maternal mortality is low. Dr. Voorhees brought out some very interesting and valuable points in his paper. It seems to me we cannot be too careful in instructing our patients in the matter of diet. We are sometimes called in to see patients who are having a difficult labor, simply because the child is too large. Some women have had absolutely no instruction as to suitable diet, and we regard the question of diet as a very important one. Another point is about the exercise. Certainly, the pregnant woman should walk a great deal, especially out of doors; it is the very best thing she can do. Some men will simply tell a patient to exercise, but the patient should walk just as far as she can, without too great fatigue; say two or three miles every day.

In regard to pelvimetry, I think we all rely upon the pelvimeter as giving an approximate idea in regard to the size of the pelvis. In rare instances, the external measurements are normal and the internal are short. Some months ago I was called to see a primipara who had been taken care of by a most excellent man, who said the pelvic measurements were normal. He had tried forceps, but the patient was delivered only after version and craniotomy of the after-coming head. Finding the external measurements normal, and failing to reach the promontory, he had naturally not suspected a contracted pelvis. With reference to the induction of labor, I agree entirely with Dr. Voorhees, when he states that fetal mortality is very low when labor has been induced at or near term. We should carefully estimate the day when labor should occur. When the child is of good size and the pelvis is normal, or slightly contracted, I think it is much better to put in a bag and induce labor, rather than to allow the patient to go on for weeks perhaps, only to have a very difficult confinement, for with induction at this time, the child can, as a rule, be saved.

DR. MALCOLM MCLEAN.—I will only take a moment to say, Mr. President, in regard to the suggestions made by Dr. Jewett and Dr. Edgar, of course I assumed those conditions were so, and intimated it where I said, where the conditions are found to be typical. Of course in the absence of any of those features, the whole picture is changed.

In regard to pelvimetry, personally, I beg to say I depend entirely upon internal manual pelvimetry.

DR. RALPH H. POMEROY.—The argument presented this evening was in defense of the management of the specific case rather than an argument for the extensive use of hebotomy. I do not advocate a stampede for experimental trial of this operation nor do I believe that it will unlock the difficulties of any large number

of cases. I speak for a conservative consideration of its applicability to carefully judged disproportion observed too late in labor for safe Cesarean section, giving due weight to the condition of mother and child.

In 1906 I reported a successful symphysiotomy. In a subsequent pregnancy of the same patient, I attempted delivery at eight and a half months by podalic version and extraction, and lost the child. The case reported to-day is the only other instance in which I have opened the pelvis.

DR. JAMES D. VOORHEES.—I think that the subject of the evening has been very well thrashed out and that the consensus of opinion is fairly uniform as to the management of these cases.

As I said in my paper, and as emphasized by Dr. Edgar, the character and strength of the pains and the consistency of the cervix are very important considerations in the progress of labor where there is any disproportion between the fetal head and the maternal pelvis. We find many cases where uterine inertia has much to do in the failure of a spontaneous birth.

I must confess that I have not had the good results mentioned by Dr. Coe in the use of morphine in a rigid, undilating cervix. Only too often after the administration of sedatives in protracted labor, the patient simply sleeps and no further dilatation has been accomplished.

I think the field for Cesarean section in contracted pelvis is broadening daily, but we must be careful not to operate by the abdominal route without justifying indications. I would like to see more cases of pubiotomy in cases similar to the one reported by Dr. Pomeroy to-night. I believe, however, that the field is rather limited.

I must say that I view the operation of version in moderate degrees of contraction of the pelvis with trepidation. The results reported by Dr. Harrison are much better than my own for this operation. There is no doubt that too many high forceps deliveries are being done, especially by the younger men. We are all called in consultation too often for such cases and find that all they have accomplished is to have crushed the fetal head by operating too early in labor.

I believe that the field for induction of labor in disproportions between the fetal head and maternal pelvis is also widening. This is especially true in patients who go over time. I do not think a woman should go over the exact date more than a week, even though the pelvic measurements are normal. It is very important, however, that the proper estimate for the date of labor should be made, for there are many cases who do not conceive until just before the period which does not appear. These patients are not really due until two or three weeks after the date calculated by Naegele's rule.

Finally I might say that in the practice of obstetrics many physicians leave too much to nature while on the other hand much "meddlesome midwifery" is done.

DR. VINEBERG.—I would ask Dr. Voorhees how he estimates the duration of pregnancy in cases which go over time.

DR. VOORHEES.—By estimating the size of the child and by noting the consistency and dilatation of the cervix. This is simply a matter of experience for I do not know any other method of determining whether the patient conceived just after the last period or just before the next one which is due but which does not appear, unless we are given the date of a single intercourse after the last period.

Meeting of February 11, 1908.

The President, EDWIN B. CRAGIN, M. D., in the Chair.

DR. ABRAM BROTHERS, presented the record of a case of

ABSENCE OF A VAGINA, WITH RETENTION OF MENSTRUAL BLOOD,
PARTIAL HEMATOCOLPOS, HEMATOMETRA, BILATERAL TUBO-
OVARIAN HEMATOCYSTS.

As I propose to make the subject of these specimens one for a larger study (for the Festschrift to Professor D. B. St. John Roosa), I shall only give a brief abstract of the case.

On November 26, 1907, Dr. H. Levinsohn invited me to examine Miss L. A., an Italian girl, at twenty-one, who had never menstruated. Since she was seventeen years old she had complained of a dull pain at and below the umbilical region. She had suffered once a month from a sharp abdominal pain which had continued during five days. At her last menstrual crisis, the pain had been acute for a few hours only. Beyond having noticed a gradual enlargement of the abdomen nothing more could be elicited in the way of a history.

The girl was tall, graceful, anemic and rather good looking. The breasts were normally developed. There was more than the usual growth of hair on the body and limbs. The abdomen protruded to the size of a six months' pregnancy. A large circumscribed fluctuating tumor with irregular upper contour—bulging higher up on the right side—could easily be mapped out. It yielded a flat percussion note. The local examination revealed a mons veneris covered with hair. The nymphæ were continuous with the prepuce of the clitoris but were distinctly shorter than normal, extending only half way down the vulva. In the space between the nymphæ a longitudinal slit—about one-half inch long—was recognized as the meatus urethræ. Below this a fraction of an inch of dense red tissue passed on continuously into the skin of the perineum. There was not the slightest suggestion of a hymen or a vagina. The little finger could be readily passed into the bladder without causing pain. The bladder seemed to be quite capacious but otherwise felt normal. With a catheter in the bladder and a finger in the rectum there was no sign of a vagina—only a thin partition separated the one from the other to a depth of about two inches. Above this point

the rectal finger felt a hard substance, regarded as the uterus, which merged into the large median tumor. On the left nothing could be clearly mapped out.

Under anesthesia the uterus could be distinctly mapped out from the large globular tumor above although otherwise inseparably juxtaposed. The vesico-rectal partition was again examined and estimated to extend to a depth of one and one-half inches from the anal margin and to have a thickness of not more than one-eighth of an inch. Although the large globular tumor is felt by the rectal finger, the suggestion to puncture it through this route is dismissed. The possibility of reaching the blood mass through a vaginal route without injury to the rectum or bladder seems to be hopeless. With everything pointing to a collection of blood beyond the uterine interior a laparotomy is decided on as the only proper course of procedure.

A median longitudinal incision about five inches in length and reaching above the umbilicus (which is later exsected) is made through the thin abdominal wall and a diastasis of the recti muscles is noted in the upper portion of the wound. There were evidences of peritonitis but no free blood in the abdominal cavity. The larger round cyst on the right side is removed first but not without an injury to its wall which permits about one-half pint of chocolate-colored liquid without clots to escape. About a pint of the same liquid remains in the cyst after its removal. The left sided tubo-ovarian tumor with the uterus (which is soft and distended to the size of an eight or ten weeks' pregnant uterus) is removed in one mass. A round, cord-like connection between the larger tumor and the posterior parietal peritoneum required section between ligatures. The cervix was distended with blood and was as large as a small uterus. A small vaginal cul-de-sac was opened below this. It seemed to extend not more deeply than a half inch from the cervix. It contained a small quantity of thick tarry liquid. The same material oozed from the uterine interior. An inspection of the little remnant of vagina showed it to be removed quite a distance (two and one-half to three inches) from the vulva. The possibility of making communication between this cul-de-sac and the vulva was considered at this time but, for various reasons, rejected. Its edges were sutured to each other, after thoroughly wiping it dry of blood, and the pelvic peritoneum sewed over it. After making the usual peritoneal toilet the abdominal wound was closed in three layers. Although the operation presented a number of technical difficulties and consumed about an hour and a half in its performance, the patient made an uninterrupted recovery and was sitting up at the end of a week. She has been free from symptoms since.

The specimens have shrunk considerably and consist of a uterus, somewhat larger than the normal, from which, at its lower portion, a short cuff of vaginal cylinder projects. The left tube is enlarged, embraces the ovary to which it is glued in

three-quarters of a circle, and ends in a retort shaped distention which is fused with the ovarian blood-cyst. Its interior contains black blood. The left ovary consists of a single blood-cyst, the size of a small orange or peach. The right tube at its uterine end is not enlarged and permits the passage of a probe. The outer end is distended into a pipe-shape and becomes merged into a large hematovarium which, at the time of operation, reached well up to a point beneath the under surface of the liver. It was filled with dark chocolate-colored blood. At the time the uterus was cut away a small hematocolpos containing probably two drams of blood was discovered and from the cervix black blood exuded (hematotrachelos and hematometra).

The posterior aspect of the tumors shows a roughened appearance at the back of the uterus and left ovary the result of old peritonitic inflammation. The right tube at a point corresponding to its middle portion is very much thinner so that its wall presents the thinness of tissue paper. The same thinness is noticeable in the walls of the two ovarian blood-cysts—particularly the larger one on the right side. In neither of these cysts is there macroscopically any evidence of ovarian structure. Nothing is to be seen but thin spherical shells filled with blood.

DISCUSSION.

DR. EDWIN B. CRAGIN.—The chair would simply recall one little experience that resembles this case to a minor degree. That was where there was a double uterus and no connection between the vagina and half of the uterus, and that half of the uterus and tube became distended with blood. Apparently the undeveloped half of the uterus menstruated into itself and because of no connection with the vagina, dilated the tube giving a hematosalpinx, which at first we thought was an ectopic gestation, but at the second examination it was decided to be caused by the lack of drainage from the occluded half of the uterus.

Excepting that most authorities seem to think that a condition of this kind can only be acquired—that it is not congenital—later students of the subject seem to think that some of these cases can be congenital; the idea being that where you have an occluded vaginal canal with normal uterus, tubes and ovaries, in order to explain it, it must have been acquired in the fetus, or shortly after birth. At all events after the Müllerian ducts have been properly fused.

DR. HOWARD C. TAYLOR reported a case of

FIBROMA UTERI, HYSTERECTOMY, DEATH FROM TETANUS SEVEN WEEKS LATER.

On December 7, 1907, I operated at the Roosevelt Hospital on F. J., a negress, twenty years of age, for a fibroma of the uterus, doing a supravaginal hysterectomy. The tumor was about five inches in diameter and was removed without trouble. The patient made a smooth recovery, the wound healed by

primary union without any signs of infection and the patient was discharged from the hospital on December 23, 1907.

On January 21, 1908, the patient was admitted to the St. Luke's Hospital on the service of Dr. S. W. Lambert, with the history that three days previously, that is forty-two days from the time of the hysterectomy, she first noticed some pain in the jaws and some difficulty in opening the jaws. The trouble with the jaws increased and was accompanied by muscular twitchings and tonic contractions of the muscles, especially those of the back.

On admission, the pupils were equally contracted, there was no reaction to light or to accommodation. The jaws were set tightly and could be opened only one-quarter of an inch; there was marked rigidity of the neck and all extensor muscles. On any slight irritation, a marked tonic contraction would take place. The temperature was 101. The patient was profoundly sick when admitted and steadily became worse and died January 25, 1908, seven weeks from the time of the operation.

At the autopsy, the abdominal wound and the field of the operation in the pelvis were clean and free from any signs of infection. No tetanus bacilli were found in the brain, spinal cord or elsewhere.

The diagnosis of tetanus, therefore, was made on the clinical symptoms and not on the pathological examination but was, however, doubtless correct.

The two points of interest in the case are:

First, did the tetanus develop as a result of the operation?

Second, if so, from what source?

The period of incubation of tetanus varies greatly, from a few days to several weeks, and as a rule the cases of a short period of incubation are the most severe and associated with the highest mortality. In this case, the first symptoms were forty-two days after the operation and the symptoms were severe from the start and the patient died at the end of seven days. The patient was examined carefully and no injury or small wound could be found, neither could the history of any injury be obtained from the patient or her friends. It would seem therefore that the infection took place, possibly though not positively, at the time of the operation.

Assuming that the infection occurred at the time of the operation, what would be the most likely source of the infection? So far as I know there never has been a case of tetanus on the gynecological service of the Roosevelt Hospital and the only cases on the surgical service have either been admitted with the disease developed or have followed a definite injury. In looking for the definite source for the infection, however, one naturally thinks first of the catgut. In the operation plain catgut, Nos. 1, 2 and 3, were used entirely, with the exception that there were two or three sutures of chromic catgut, No. 2 or 3, used in the fascia.

The plain catgut was sterilized in Park's solution, the chromic catgut by repeated boiling in alcohol.

It is possible if the source of the infection were the catgut, that it accounts for the long period of incubation, as the germs may have been in the inner parts of the strand and not liberated till the catgut had disintegrated.

It is my opinion that the infection may possibly have resulted from the catgut used at the time of the operation but it is not possible to positively prove it.

DISCUSSION.

DR. BOLDT.—It seems to me that if the infection had taken place from the catgut, it would have been possible to have obtained a culture from the wound—where the catgut was used. I do not know whether an attempt was made to get cultures from that part or not, but that would seem to be the most reasonable procedure. I have lost two patients from tetanus myself, both showed the first symptoms after operation on the twelfth day; one after a hysterectomy for a myofibroma and the other after an ovariectomy for a large colloid cystoma.

In the first instance we did not have an opportunity to get cultures. In the second instance, we did have the opportunity to get a culture from the wound. It was not, however, an infection from catgut; that we were able to satisfy ourselves upon by making a very thorough examination of our catgut; it was impossible to trace the cause of the infection in either case. It seems to me that Dr. Taylor's assumption, that it came from the catgut, would hardly stand.

DR. JEWETT.—There was a case of tetanus in Brooklyn after a plastic operation by one of our own members more than a year ago in which the tetanus developed much earlier than in this case. Antitoxin was used but the woman died. About the same time there was a similar case reported in the German literature, by Martin. Tetanus developed on the fifth day after an extensive plastic operation. This patient, too, died in about two days. The catgut was suspected but sutures from the same lot had been used in several other cases with no ill results.

Mice inoculated with the uterine and vaginal secretion developed tetanus within twelve hours. The question was very carefully worked out and the conclusion reached that the bacillus was present in the vagina before operation.

DR. HOWARD C. TAYLOR.—The plain catgut was sterilized in Park's solution which is a solution of tartaric acid and bichloride of mercury, I think, in alcohol and ether. The chromic catgut was sterilized by repeated boiling in alcohol.

DR. BRETTAUER.—I used to think that catgut might cause tetanus, (when I listened to cases reported) but only recently, a few weeks ago, I had a case of acute tetanus myself happening in a young girl upon whom a criminal operation had been performed. She was curetted; the uterus cleaned out; the tempera-

ture, which at the time of admission was 105°, promptly fell to normal; she made an absolute uninterrupted recovery, was about to be discharged, when on the tenth day she developed marked symptoms of tetanus and died within four days.

DR. JARMAN.—Dr. Coe had two cases at the Memorial Hospital; one case had a breast abscess. She had been confined ten days before her admission. He had her put on the list for operation that morning as the last case, and forty-eight hours later, making my rounds, this woman with the breast abscess complained to me of her jaws, and I said "Never mind," and passed on to the next bed. The next woman complained in the same manner, and I said to the house surgeon, "Doctor, you must be a little less vigorous with your thumbs." The house surgeon said later that she still complained. The woman showed evident signs of tetanus, and the woman who lay beside her complained also. We isolated the woman with real tetanus, and the other one did not develop it. Another woman at the end of the third week was just about ready to go home, when she developed the disease. We were never able to show that it came from the catgut, even the larger size of catgut, where the central part is not properly sterilized.

DR. BROWN.—While listening to the reciting of the experiences of other members of the Society with tetanus, I have been trying to recall the details of an outbreak of tetanus occurring at the Woman's some twelve years ago.

There were four cases all within a short period of each other and all on one of the five services of the hospital. No cases occurred on any other services.

Catgut used in the hospital at the time was prepared in the usual way of boiling in alcohol under pressure. I do not attribute the outbreak to the catgut, since the other services used the same gut.

Each case developed during the second or third week of convalescence. They all got well after running a certain course. One of the four died of pulmonary embolism some days after the tetanus had subsided.

We called in consultation Dr. Thompson, who stated that in his opinion the condition was that of tetany. What the difference is between tetany and tetanus I do not know, unless it is that one gets well and the other don't.

The outbreak subsided, no other cases developing the condition. There have been no cases in the hospital since this time.

DR. McLEAN.—I would like to say I have some doubt about connecting that directly with the operation Dr. Taylor speaks of. That very thing of incubation is very often dubious. There are so many things to occur to the human being in the same time—trivial things may occur in the mouth—dental operations which are forgotten. Tetanus has been communicated through a tooth brush, and there are various ways in which tetanus can be produced. I have seen cases of that kind. I never yet have seen

a case that could positively be traced back to so remote a period. Never, I think, is the incubation period proven so long as that. The cases well known that are under observation are all within three weeks. It is very much like our hysterical people suffering from hydrophobia where they have been bitten by a dog two or three years ago. They lay the infection to the dog, whereas we invariably find they may have been scratched by a cat within three weeks of the time the disease has developed, but it is attributed to the dog. They all think of the accident two years before. The doctor has performed an operation, and four weeks afterwards the disease develops. In between the time of the operation and the tetanic outbreak, there may have been something which would have been much more likely, in my mind, than the catgut or any other detail of the operation to have caused the infection.

DR. HOWARD C. TAYLOR.—So far as I know there was no special bacteriological examination made of the wound. It was examined and apparently was clean. I am not sure about that. I am glad to know that the general opinion is that the tetanus was not the result of anything connected with the operation and concur fully with that opinion. The patient was a colored woman, and had been out of the hospital two or three weeks before the disease developed. Some small injury not noticed by the patient could have caused the infection.

DR. J. D. BISSELL demonstrated his method of

INTRAABDOMINAL SHORTENING OF THE ROUND AND BROAD LIGAMENTS FOR RETRO-DISPLACEMENTS OF THE UTERUS.

My only purpose this evening is to demonstrate an intra-abdominal operation on the round and broad ligaments for the correction of retro-displacements. This operation was devised by me two years ago and is the outcome of one described before you in 1901.

Some of us are best able to convey our ideas through words, spoken or written. Others through the mediums of pencil or brush—but my only refuge for clear expression is through such mechanical means as I here exhibit.

The abdomen is opened through the median incision, the uterus restored to its normal position and the fundus grasped with a double tenaculum. Gauze pads are forced into the pelvis behind the uterus to hold it in position till the completion of the work, and to prevent the intestines from occupying the field of operation, thus interfering with vision. Trendelenburg posture is of great advantage in facilitating the work. The abdominal wall is retracted by means of a short bladed retractor, and the round and broad ligaments on one side exposed to view. The use of the long bladed retractor is undesirable as it may be so placed as to press upon the outer side of the ligaments, relatively shorten them, and confuse the operator. The double tenaculum

holding the fundus is now released and the round ligament is grasped with it one-half inch from the uterus. The ligament is again grasped with another double tenaculum one-half inch from the first and to the outer side. Gentle traction is now made upon the two instruments so as to make taut the section of the round ligament between them. This portion is incised longitudinally and the thin blunt handle of the knife passed through this incision into the broad ligament below, completely separating the surfaces. The tenaculæ are now shifted to the middle of each incised portion and the longitudinal division of the round ligament completed. The division outwardly is continued to within about one-third inch of the reflected perineum and inwardly to within a fraction of an inch of the uterus. A small artery is usually divided near the uterus and should be controlled immediately by ligature. Great care should be taken to divide the ligaments at the center and a scissor bent at an angle to its narrow surfaces, is of great assistance. The round ligament now consists of two portions, an anterior and a posterior. The anterior portion is then severed near its junction with the uterus and removed all but three-fourths of an inch. The posterior portion is next severed three-fourth inch from the uterus, and its remaining portion cut away.

By this plan of dissection we do not encroach upon the Fallopian tubes nor disturb in any way the vessels which are sometimes found very large in the tissues between the round ligament and the tube. A silk or linen suture (No. 1 or 2) on a fine half curved needle is now passed through the cut end of the remaining anterior portion of the round ligament and through the uterus at the point where the anterior portion was originally attached. Another silk or linen suture is next passed through the round ligament near the point where the posterior portion was originally attached, and through the cut end of the remaining posterior portion. When these sutures are tied the anterior and posterior portions remaining of the round ligament so adjust themselves to each other as to make a continuous ligament. These united portions, three-fourth inch each, together with the one-eighth of the individual ligament on the outer side, give us a restored ligament a little more than one inch in length.

Another silk suture is passed through the middle of the adjusted anterior and posterior portions and the approximation of these two sections of the round ligament causes a rearrangement of the surfaces of the broad ligament. The section of the broad ligament above which the anterior portion of the round ligament was cut folds upon itself near the uterus and is sutured together with chromic gut No. 1. The section of the broad ligament above which the posterior portion of the round ligament was cut folds upon itself near the pelvic wall and is likewise united with chromic gut sutures.

The surface of the broad ligament immediately below the remaining anterior and outer portions of the round ligament is,

by the restoration of the round ligament, apposed to the surface of the broad ligament immediately below the remaining posterior or inner portion of the round ligament and a suture passed maintains these surfaces in position.

The same procedures are carried out on the other side and the operation is completed.

DISCUSSION.

DR. A. F. CURRIER.—What is to prevent a subsequent stretching of this portion at a later time? The same force would be apt to stretch them again and so reproduce the condition.

DR. BISSELL.—My answer to Dr. Currier's question is that by the operative procedure described the uterus and its supports are restored to their normal position and functioning. If they be again subjected to the same influences which provoked the abnormality the same results will follow. A fixed position of the fundus forward can be insured only by creating abnormal conditions.

DR. BOLDT.—The operation is exceedingly ingenious. It is a question, however, whether we ought to discuss it until we decide whether it is of any more practical value than the shortening of the round ligaments by Alexander's method, so far as the position of the uterus is concerned. When the patients upon whom Alexander's operation is done are properly selected, it gives satisfactory results. Now is this method any more practical in its results? Does it give the patient more relief, and is it superior to the Alexander operation? So far as I am concerned, I would never open the abdomen to correct a simple posterior displacement, that is the main feature. What benefit do we gain by following the technic which has been described by Dr. Bissell?

DR. JEWETT.—This technic is very similar to the procedure sometimes followed by the general surgeon in dealing with contracted tendons except that the tendon is lengthened instead of being shortened. But tendons are such denser and stronger tissues than the round ligaments. I would like to know if the doctor gets fewer failures than by other methods.

DR. GRAD.—I had opportunities of seeing Dr. Bissell's operation on several occasions, and it was a matter of great surprise to me to see, after the operation is finished, how completely the uterus is replaced in its normal position, and not only that, but the uterus is movable, and in every way it is as complete a restoration of conditions as we could possibly obtain. I think that there are a great many advantages to this operation.

First of all it is an operation that is done after the abdomen is opened, and pathological conditions corrected. Of course the operation has its field of limitations also, such as a very heavy uterus, but in the cases where the operation is indicated, I believe this operation restores conditions better than any operation I know of done for this particular condition. I have also had the

opportunity of seeing the patients afterwards, and I find that the position of the uterus is perfect after this operation.

DR. STUDDIFORD.—I want to ask if the round ligament was split, or simply the peritoneum over it. I have not had opportunity to examine this pelvis.

DR. BROWN.—I have watched Dr. Bissell do this operation and the result is most satisfactory. The uterus is brought in excellent position and he does it admirably. The only thing that struck me about the operation is that it takes a great deal of patience, which Dr. Bissell has, in working it out and matching the parts. His after-results are, I hear, excellent.

There is one point of which I wish especially to ask Dr. Bissell. He says that the ovarian vein is at times as large as a lead pencil and even in this varicose condition he feels it to the interest of the patient that the circulation should not be disturbed. To my mind it looks to me that in such a varicose condition the circulation is already disturbed and that in such instances many of the patients' symptoms come from such a condition of distended and engorged vein. To rectify such and to relieve the patient of her symptoms a simple restoration of the uterus to a normal position is not sufficient. The walls of the veins have already undergone changes, they are dilated and the indication is to treat them as other varicose vessels and remove them.

DR. BISSELL.—My purpose was not to provoke a discussion on the merits of retroversion operations, but simply to describe and record this new procedure.

In answer to Dr. Boldt's question, however, I will briefly say that Alexander's operation attacks only the round ligament; my operation deals with both the lateral supports, the round and broad ligaments, of the uterine body.

In answer to Dr. Brown's remarks concerning the large vein sometimes found in the tissue between the tube and the round ligament, my opinion is that by restoring permanently the fundus to its normal position, the engorged vessels of the uterus and the surrounding tissues empty themselves. As evidence of the correctness of these views, the symptoms for the relief of which the operation was done, disappear.

DR. BRETTAUER.—This operation is very original and very beautifully devised, and on the face of it very nice, but it is an operation for a condition which in half the instances is not a pathological one, or better, is not one which causes sufficient symptoms to open the abdomen for half an hour, and no one can do that operation in less time than that. Therefore, I question the propriety of such procedure in uncomplicated retrodisplacements of the uterus.

DR. BROWN.—I have been doing a large number of Alexander's operations, and I have had no trouble with the bladder.

DR. CHILD.—I have not had the pleasure of seeing Dr. Bissell do this operation. I should like very much to have the opportunity of seeing the condition of the round ligaments some six

months or a year after the operation has been done. Undoubtedly Dr. Bissell has had an opportunity of reopening the abdomen in some of these cases.

It seems to me, as the round ligaments are the chief objective point, the tissue which is utilized to hold the uterus in position, that the traumatism is too extensive. In severing the ligaments the circulation must be so interfered with that it cannot again be equal to what it was normally, and I should think, in the course of time, the ligaments would atrophy quite materially as the result of the extensive traumatism inflicted upon them.

DR. H. J. BOLDT presented two specimens.

INTRALIGAMENTOUS DEVELOPMENT OF CHRONIC PYOSALPINX.

The specimen shows what is alluded to in my remarks on the diagnosis, how a tubal tumor may coalesce with the uterus, forming a single mass with it.

HYDROSALPINX SIMULATING AN OVARIAN CYST.

The specimen is presented in connection with my part of tonight's symposium. It shows how easily one can err in the diagnosis, when, as in this specimen, a large quantity of fluid accumulates in the abdominal half of the tube, and there forms a globular tumor which rests on the floor of the pelvis. The correct diagnosis was made in this instance, because only a short part of the tube could be palpated, and then it was felt to coalesce with the dilated mass of cystic consistency, which was diagnosed as a hydrosalpinx tumor. The ovary of this patient was retained and fastened into the cornu of the uterus.

Papers were read by DRS. BOLDT, HYDE, and OASTLER on

NONPUERPERAL PELVIC INFECTION.*

DISCUSSION.

DR. JEWETT.—The doctor has alluded to the hopelessness of diffuse peritonitis. A considerable proportion of such cases I think should be saved under present methods of surgical treatment, at least as many as one-third.

The advisability of leaving an ovary after an otherwise clean sweep of the pelvis I think may be questioned.

DR. McLEAN.—I want to make a plea for the power of nature to restore organs which are apparently hopeless. Fifteen years ago I read a paper on this idea of conservatism—these phases of it—in this Society and I was very severely criticized for presuming to read anything that led to temporizing with these cases. I used the argument that if men would take time to observe what nature would do, they would change their views. I have had the satisfaction of seeing these gentlemen change their views.

Nature will restore cases which are apparently hopeless where the exudate is such that the tubes and ovaries are amalga-

* See original articles, pages 487, 496, 504.

mated into one mass and the other organs cannot be mapped out—such cases giving us a hopeless picture of a patient being in a condition of hopeless invalidism, yet in such cases, nature will very often do more than we can with all our skill.

DR. HARRISON.—I do not know that I understood Dr. Boldt. Did I understand you to say, doctor, that there could be no such thing as parametritis that was not of puerperal origin?

DR. BOLDT.—No, sir, you did not. I said it was most frequently the cause of it.

DR. HARRISON.—I am glad that you did not (laughter).

I think that nonpuerperal traumatic parametritis is amongst the most interesting of all these pelvic infections which Dr. Boldt suggests we do not meet with every day—they are not so frequent. Several years ago I performed a supravaginal operation for the removal of the uterus on account of the existence of a myoma. Fever set in, and she had a large exudate in the pelvis. I was anxious about her. Her condition was grave, but fortunately it was found it did not take its origin from the pelvic organs. It was entirely extraperitoneal.

It had extended from the tissue on one side of the cervix and then up into the space in front of the bladder. After opening the abscess, the patient got entirely well. The only complication was an opening into the lower portion of the bowel, and that healed in the course of time.

With regard to the conservative treatment of some of these cases of parametric exudates, I am sorry that nobody alluded here to Dr. Pryor's method of treatment. That seems to be the way in medicine. We make certain progress and then we forget all about our knowledge and have to commence over again. That seems to be relegated to the rear, and yet there is no method on earth that is better than that. His method consisted in curetting the uterus and then and there opening up Douglas' cul-de-sac, breaking down the adhesions and packing in iodoform gauze. I have seen exudates there, the patient in a most deplorable condition, and later absolutely no human being could find anything wrong except a little thickening of the broad ligament that had been the seat of the disease.

DR. WARD.—I would like to speak of one point in regard to the prophylaxis of gonorrheal endometritis. The point was brought out by Dr. Oastler, that to leave those cases alone if there should be any gonorrheal infection of the cervix or uterus, was the safest thing to do. Of course we all recognize that, but if the uterus has not yet been infected we should endeavor to protect it from the invasion of the gonococci.

Dr. Harrison spoke of Dr. Pryor's work and that made me think of one thing he advocated in regard to the prophylaxis of gonorrheal endometritis, that is, not to direct the woman to go home and take a douche, with the idea of using an antiseptic of some kind to kill the gonococci, because there was grave danger that she would carry the infection up with the douche nozzle to

the danger zone, which of course is the cervix. Gonorrhea in the external genitals of a woman is not so serious a problem, so far as her life is concerned, and her becoming permanently crippled, but if it gets above the external os its results are pyosalpinx, mutilation and sterility, and so we should have in mind the great danger of the disease getting into the uterus, and instead of giving the woman douches, which might carry infection from the external genitals, we should avoid them.

Dr. Pryor's method was to carefully kill the infection externally with nitrate of silver solution; a twenty or thirty grain solution was swabbed over the vulva, etc., and exposing the vagina with a speculum, packing it with wet bichloride gauze (1—5000) to prevent the disease getting up to the cervix. That is, he would try and limit the disease externally if it had not already gotten up into the danger zone, and not to use douches for that purpose. I have used and taught this method for many years, and with considerable satisfaction.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of November 1, 1907.

The President, I. S. STONE, M. D., in the Chair.

DR. EDWARD A. BALLOCH, presented a specimen of

CYST OF THE ROUND LIGAMENT.

A colored girl, twenty-six years of age, was admitted to the Freed men's Hospital, with a diagnosis of bubo. Upon examination there was seen at the upper end of the right labium majus a soft tumor. The mass could be pushed into the inguinal canal, but would reappear as soon as pressure was taken off. It was not painful. The history was that it had followed an illness some three years ago, during which the patient had coughed severely and continuously. It had enlarged slowly. Diagnosis, prolapsed ovary. At the operation it was found that the tumor was a cyst, which was attached to the upper surface of the round ligament outside the external inguinal ring. The proximal portion of the ligament was well defined, but at the attachment of the cyst the ligament is thinned out and is lost in the wall of the cyst.

DR. BOVEE in discussing Dr. Balloch's specimen said, the condition of cyst of the round ligament was rare and the diagnosis very rarely made before operation. He has had two cases, one inside and one outside the inguinal ring.

DR. VAUGHAN had seen a similar cyst just outside of the ring and interpreted the condition as a hydrocele of the round ligament.

DR. BALLOCH read the paper of the evening on

THE USE AND ABUSE OF SALT SOLUTION.*

DR. PRENTISS, in opening the discussion, spoke of the value of salt solution in hemorrhage and shock. In toxemia salt solution is of marked benefit; in mild toxemia it is of some use to unload the bowels; in eclampsia to replace blood removed; in the colitis of children as high colon flushing it is of great benefit in removing bacteria, their products, and the mucus.

DR. BOVEE found it of great value in anemia. One quart of solution per rectum twice every day with only rest in bed and food gave rapid increase in the hemoglobin, from 15 to 70 per cent. in three weeks. He found that fluid left in the abdominal cavity did not absorb as fast as 3 per cent. per hour. In one nephritic case marked urine improvement was noticed in five days. In acute peritonitis it was not desirable to leave fluid in the abdominal cavity but he now left fluid in the abdomen principally in cases of normal peritoneum to maintain a preceding pressure. The temperature of the solution injected was very important, as there was usually a fall of 11° to 15° F. between the reservoir and the canula. The chill at times occurring after injection was probably due to low temperature of solution. Slow administration was the choice method. The amount given should not greatly exceed the amount lost if given intravenously. Given under the skin the quantity could be compensated far better but too much given might produce hydrops of the serous cavities, edema of the lungs, etc.

DR. MILLER asked Dr. Balloch if it was necessary to have the strength of the salt solution so near the exact percentage when given in the peritoneal cavity, rectum, and subcutaneous tissues, as when given intravenously. And asked what the effect would be of giving water under the skin.

DR. J. T. JOHNSON said that he had used salt solution principally in the peritoneal cavity, that he had used it first in cases with adhesions and that the subsequent history of these cases as to the effect of the solution was not clear. He thoroughly believed in the teaching of Dr. Emmet who said that: "It is not so much what is taken out of the abdomen as what is introduced that causes the fatal results." Dr. Johnson did not believe in putting too much into the abdomen. He believed in doing the least necessary. The less the handling the less the shock. He did not consider flushing of the abdominal cavity as effective in removing pus as sponging with long strips of gauze.

DR. BALLOCH, in closing, said that in colitis there was a dehydration of the tissues and so an indication for the use of salt solution; that he did not believe in the use of salt solution in anemia, per se, except for the hemorrhage; that the pressure of the solution in the abdomen was beneficial; that the variation of the percentage of the salt in the solution was not of great moment

*See original article, page 541

within certain limits except when given directly into the blood-vessels.

Meeting of November 15, 1907.

The President, I. S. STONE, M. D., in the Chair.

DR. KELLEY presented a specimen of

RENAL CALCULI.

Mrs. A. B. D., white, aet thirty-five. Born in D. C. Married; two children, last, nine years ago. During first pregnancy sixteen years ago had attack of lumbar pain and vesical tenesmus lasting several days, which terminated in the passing of several small calculi. Has had several attacks at intervals until eight years ago when the last gravel passed. During a period of several years the urine was cloudy and often with heavy sediment. In November and December, 1906, had a left sided pneumonia—recovery slow. About December 15, the urine became scant and clear. A swelling appeared in the right flank, with severe pain in back and region of swelling. Four days later swelling gradually decreased, pain ceased and urine was again cloudy, examination showing it loaded with pus. Diagnosis, pyonephrosis. (Operation urged.) Attacks of pain, swelling, tenderness, some fear and sweats accompanied by clear urine, returned at intervals until October 18, 1907, when severe symptoms developed. Temperature ran up to 103, pulse to 120, chills, and sweating. Swelling large as cocoanut and persistent. Dr. Kelley saw the case in consultation October 24, and advised operation which was done on October 28, 9 A. M., by lumbar incision. Kidney drained, nearly a quart of pus escaping. Two large calculi removed. Patient did well for 36 hours, when renal action became insufficient and she died in uremic coma October 31, 9 A. M.

The interest in this case centers about the cause for suppression of the urine after operation when there was plenty of urine before. The operation lasted only about fifteen minutes and amounted practically to opening an abscess. So that, for the cause of the suppression we might possibly blame the anesthetic, which was chloroform. No necropsy was held, so that we do not know the exact condition of the other kidney, except from the urines excreted before operation and during the first hours after.

DR. BOVEE considered the treatment in this case correct, nephrotomy in place of nephrectomy. That the poor condition of the patient rather than the chloroform might account for the subsequent death of the patient.

DR. VAUGHAN did not consider it necessary to attribute the death to chloroform suppression of urine as there might have been stones in both kidneys, or a reflex suppression of urine. In one case that he had operated upon, he had been obliged to operate first on one kidney and then on the other, and had found suppression with obstruction on one side only.

DR. MORAN asked what better could have been done, granting that the anesthetic had been the cause of the suppression.

DR. ABBE said that he had given the anesthetic in one rather unusual case that had been most interesting for two reasons. First the stones removed from the kidney had been about fifty, small, faceted soft, stones very similar to gall stones. That after the operation the patient had continued to pass similar stones from the other kidney but had remained in good health and without any marked pain. The second interesting point was the anesthetic which had been nitrous oxide and oxygen only, throughout the three-quarters of an hour that the operation lasted, neither chloroform nor ether being given. This was the anesthetic of choice as producing the least postanesthetic kidney disturbance. In this case the patient had had an unusual post-operative mental condition, a semi-delirium in which she repeated over and over for twelve hours one phrase, but aside from that there had been no complications after the operation.

DR. ABBE read the paper of the evening

CHLOROFORM VERSUS ETHER AT COLUMBIA HOSPITAL FOR WOMEN.*

DR. WHITE, in opening the discussion, said that the mortality statistics from anesthetics are not reliable since, though the medical men among themselves might acknowledge the death as due to the anesthetic yet this cause of death was not reported to the health office. The army statistics are more reliable but even these are not above question, the figures of 1 in 8,000 for ether and 1 in 3,000 for chloroform not being satisfactory. The danger from chloroform is in the early stage, later chloroform is safer than ether on account of the after-effects. Bad effects are due to the anesthetizer rather than to the anesthetic. The number of cases of nephritis after chloroform is increased by the fact that the nephritis cases are given chloroform rather than ether. He considered the figures of 35 per cent. nephritis after chloroform as too high. The postanesthetic pneumonias following ether he thought due to exposure of the patient. The administration of ether by the drop method he had tried and found not satisfactory. He prefers the Allis mask. The new methods and masks do not seem to be any distinct improvement. There is vomiting after 80 per cent. of the ether cases but this can be materially decreased by stomach washing.

DR. LOWE had given over over 1,700 anesthetics a slight majority being chloroform on account of the larger number of minor operations. In giving ether he had found the drop method much more satisfactory than the closed cone. The drop method had reduced the stage of excitement during the administration by two-thirds and cyanosis, during the anesthesia, was now a rare occurrence, though formerly it had been common. He thought that nephritis occurred more commonly after ether than

*See original paper, page 547.

after chloroform but that in a large number of cases it was due to the injury and shock of the operation rather than to the anesthetic. In many injury cases where no anesthetic had been given, blood and casts were to be found in the urine. He also considered the vomiting after ether more frequent than after chloroform, though he recognized that some of the most persistent cases of vomiting followed chloroform. He did not think it desirable to select one anesthetic and give that to the exclusion of all others. He did not think that the administration of atropine and morphine would avoid the excessive secretion of mucus in all cases. In the hands of a careful man he considered chloroform as safe as ether. He thought the dangers of chloroform were in the early stage and due to respiratory paralysis. In chloroform there is a vasomotor paralysis followed by a respiratory paralysis. In the one chloroform death that he had had the pulse had been palpable for a half hour after respiration ceased. To help counteract the vasomotor depression of the chloroform he recommended the use of atropine sulphate, one one-hundredth of a grain before the anesthetic. The Trendelenburg position was a great help during the operation.

DR. VAUGHAN had started in surgery with the idea that chloroform was better than ether, but now he is satisfied that ether is far safer than chloroform, though for the skilled anesthetist the two may be equally safe. In the course of eighteen months some five years ago he had four deaths from the anesthesia, all that he had had in twenty-five years; two of these had been from ether and two from chloroform. All had been due to respiratory paralysis. The heart had continued to beat for some time after the respirations ceased. Chloroform kills at times after the administration is stopped. In one case where chloroform had been used for the reduction of a fracture the patient died while the bandage was being put on. The second chloroform case had died while the patient was being anesthetized by an experienced man, the operation being one for trouble with the testicle. The two other deaths had both been in neck cases. One had a malignant tumor under the angle of the jaw. He had tied the external carotid artery and had handled the big nerves of the neck more or less. The patient died at the end of the operation. The other ether case had been an aneurismal varix. The incision had just been made in the base of the neck and no tissues had been handled, when the pulse suddenly dropped to about one-half its previous rapidity, and the respirations became shallow and ceased. He considered the proportion of deaths of 1 in 6,000 for chloroform and 1 in 16,000 for ether the most satisfactory statistics at present available. He thought the drop method for ether the choice.

DR. WALL did not believe in letting the choice of the anesthetic rest with the operator. The operator should choose the anesthetist and make him responsible for the entire control of the patient's general condition during the operation. The only post-

operative deaths that had been due to nephritis that he had seen had been after chloroform. In obstetrics he always changed from chloroform to ether if there was to be any operative work.

DR. T. C. SMITH thought the reason anesthetic statistics were so unsatisfactory was that the profession did not explain to the public that there was always a danger in the anesthesia and hence we had to explain the cause of death under the anesthetic. All of the cases dying under the anesthetic however were not due to the anesthetic. In some of the cases the patient was practically frightened to death at the thought of the anesthetic and went into syncope when the drug was smelled. The proportion of cases dying from the anesthetic was smaller than the number killed by any one of a number of accidents which pass without comment, and yet the anesthesia death always causes great commotion, if it gets into the daily press. He would not allow any case to be reported to the health office as a death from the anesthetic.

DR. NICHOLS said that the point which interested him most in this connection was the acid intoxication after the anesthetic, which produced serious symptoms. This occurred in a mild form in about 15 per cent. of the cases but in other cases there was a more severe type, in some being a recognizable cause of death. It appeared as obstinate vomiting and coma, beginning twelve to twenty-four hours after the operation. He thought that the acidosis should be differentiated from uremia and shock, as they needed very different treatment. The acidosis might be due to shock rather than to the anesthesia. Fractures and injuries give acetoneuria and acidosis. The postoperative urine analysis of the series reported, he thought would not warrant the term nephritis but rather a simple albuminuria.

DR. MILLER said the late effects of chloroform had recently been shown to be similar to acute yellow atrophy of the liver, being associated with fatty degeneration of heart and kidneys. This was especially true in children. He thought rectal anesthesia with ether would be suitable for face and lung cases. A disadvantage of chloroform when given near burning gas was the occurrence of very irritant decomposition products which he thought might well produce pneumonia.

DR. MORGAN thought postoperative pneumonia not a very common occurrence. He had seen only one case. In alcoholic subjects he thought chloroform necessary. He had read that operations on the fingers were the most dangerous from the point of the anesthetic.

DR. BALLOCH thought some of the deaths on the table due not to the anesthetic but to the carelessness of the operator, especially with ether. He considered unduly long anesthetics distinctly reckless. As to the choice of the anesthetic, he believed in turning the anesthesia over to a man in whom he had confidence, and following his judgment in everything about the patient's condition. He thought the critical test of choice between

anesthetics came when the physician had to take the anesthetic himself. Recently he had to make this choice and unhesitatingly chose ether.

DR. ADAMS has never seen a death from an anesthetic at the Children's Hospital though he has seen some very narrow escapes. He did not think it desirable for the anesthetist to watch the operation. He had personally never had any trouble except in one case where the woman fainted before the anesthetic. He considered ether the choice for long operations and chloroform for short ones, yet he always had a fear of chloroform. He thought the greatest mistake of our hospitals was in having the anesthesia given by the youngest man on the staff. Unlike Dr. Balloch, at the time of operation on himself he had chosen chloroform, but when he recovered consciousness one of his physician friends who had been present told him most emphatically never again to allow himself to be persuaded to take chloroform.

DR. WILKINSON said that during the six months' service at Garfield Hospital he had had one death on the table and that had been in a case of ruptured ectopic pregnancy in which he had considered that the woman had died of hemorrhage, and not from ether. He did not think that he had seen any difference between the after-effects of chloroform and ether and did not see any amelioration after morphine, stomach washing, and such modifications. He thought that all depended on the patient. He considered chloroform bad in its effects on body metabolism, especially in renal disease; that the danger of the narcosis was in the concentration rather than in the quantity of the drug given.

DR. WYNKOOP thought it desirable for the anesthetizer to know something of the nature of the operation and adjust the quantity of the anesthetic thereto. He thought the most danger was due to pushing the anesthetic. When giving chloroform he likes to have a bottle of ether near at hand to use as a stimulant in case of need. In one case of pregnancy with 30 per cent. albumen, he delivered with instruments under chloroform and the patient had no albumen in the urine on the third day.

DR. ABBE, in closing the discussion, said that the object of the paper had been to lay stress upon the dangers of anesthetics and to emphasize the difference between the general clinical teachings and the results of the anesthesia as shown by the Columbia Hospital records. He had not intended to go into the technic of administration, and its adjuvants. He agreed with Dr. White that stomach washing was a distinct advantage in many of the cases to relieve the postoperative nausea and vomiting. In regard to chloroform being safer than ether after the preliminary stage on account of the late complications following ether, Dr. White himself admitted that the so-called ether pneumonias were probably due not to the ether but to the exposure, and as for the nephritis, the Columbia Hospital statistics did not show any materially less number of cases of nephritis after chloroform than after ether. As to the newer methods of adminis-

tration, the Gwathmey apparatus, when used for chloroform, seems to be the best in that the concentration of the vapor can be regulated, that oxygen can be given continuously with the chloroform, and that ether is always at hand to use in case of emergency calling for stimulation. He did not care especially for this apparatus when used for the administration of ether alone. In regard to Dr. Vaughan's case of death under chloroform where the pulse rate had suddenly dropped to about one-half the former number, he had seen similar occurrences under both ether and chloroform and had called them acute dilatation of the heart where a certain proportion of the heart beats were no longer transmitted to the distant arteries. Naturally that was an indication for suspending the administration of the anesthetic, and it need not be followed by a fatal outcome. Dr. Nichol's criticism that the term nephritis was too severe to correspond with the lesion, was recognized as possibly a good one and the author was willing to substitute congestion of the kidney, but in his paper he had defined nephritis to the extent of saying nephritis, as shown by the presence of albumen, blood, or casts in the urine after operation, when they had not been present before. Dr. Miller's suggestion that rectal anesthesia be substituted for chloroform in certain cases was objected to only on account of the troubles of the rectal anesthesia, the long time taken to produce the anesthesia, and the subsequent colitis. To obviate the irritation of the decomposition products of chloroform when used near burning gas, the use of a cloth wrung out in weak ammonia was suggested. Dr. Morgan's comment on the dangers of finger operations was noted. These dangers were considered similar to those of rectal operations which were also said to be a dangerous class. Probably both were dangerous merely because of the deeper anesthesia necessitated by the sensitiveness of the parts and the activity of their reflexes. Dr. Balloch's point of dangers from the long operations was in line with the main idea of the paper, the long anesthesia increasing the toxemia. Dr. Wynkoop's suggestion that the anesthetist keep in touch with the progress of the operation was a most desirable one. Not that the anesthetist should for a second forget that he alone is responsible for the patient's general condition, but that he could, by knowing what the operator was doing, adjust the quantity of anesthetic to the needs of the operator, and so save the patient any unnecessary dose of the anesthetic. That the object of the anesthetist should be, not to keep the patient asleep and hanging over the brink of the grave at one steady point, but to administer just enough to allow the surgeon to do each step of the operation to the best advantage, and to produce as little of the undesirable effects of the anesthetic as possible.

REVIEWS.

DIE ENTWICKLUNG UND FORM DES FOTALEN BECKENS. DR. EDMUND FALK. Berlin. Large octavo; pages 163, with 6 illustrations in the text and 5 plates. Price 6 m. S. Karger, Berlin, 1908.

This monograph is based upon a most elaborate study of 110 fetuses varying in their development from the eighth week to full term. Early fetuses were studied by clearing the pelvis in xylol, older ones by dissection and radiographs. Among the more important points emphasized by the author are the following: all the characteristic properties of form noted in the new-born are already indicated by the end of the first half of gestation. The proportion between height and breadth of the pelvis in both sexes is approximately the same and the height is always greater than the breadth. By the sixth month the female pelvis shows a larger outlet than the male. Although the high position of the first sacral vertebra is characteristic of the fetal pelvis, the sacrum begins to descend during fetal life, thus overthrowing the theory of Megens and Litzmann who ascribe this descent to the effect of the body weight. Most of the pelvic deformities noted in the adult are foreshadowed in the fetus, and are due to disturbances in the direction and energy of growth rather than to mechanical causes, such as the effect of weight, traction of muscles, etc. A series of x-ray plates concludes this interesting study which will prove of interest in the theory of obstetrics, inasmuch as it seems so clear up several mooted questions.

R. T. F.

SUR UN PROCEDE D' URETERO-CYSTO-NEOSTOMIC DANS LE TRAITEMENT DES FISTULES URETERO-VAGINALES ET URETERO-CERVICALES. LES AUTRES APPLICATIONS. Par le DR. PAUL LUTAUD, ancien interne en Chirurgie des Hôpitaux de Paris. Pages 128, large octavo; Paris, JULES ROUSSET, 1907.

The author gives a very detailed review of the history of uretero-cysto-neostomy, with a full review of the literature. His excuse for his monograph consists in a description of a method practised by his chief Dr. Ricard. This consists in median laparotomy and transperitoneal exposure of the ureter; the lower end of the ureter is freed. The ureter is cut across and a short longitudinal incision made into it in order to permit the cuff-like eversion of the free end, a procedure which is said to prevent stenosis. The bladder is now incised, the ureter pushed in for a distance of two centimeters, and fastened by two layers of superficial sutures. The bladder is now attached to the pelvic peritoneum in order to prevent traction upon the stitches; closure of the wound with drainage. While the article is complete and will prove of value to anyone who desires to find the literature, its contents is not sufficiently startling or new to warrant such extended exposition.

R. T. F.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Undializable Constituents of the Urine in Pregnant Women in Normal and Pathological Conditions.—M. Savare (*Ann. di Ostet. e Gin.*, Jan., 1908) has made examinations of the undializable contents of the urine in normal and pathological conditions in pregnant women, and has injected the product obtained into animals in order to ascertain its toxicity. He finds that there is a considerable undializable residue, the amount varying with the condition of the subject. It presents both quantitative and qualitative changes in pathological conditions. Especially in the urine of women attacked by eclampsia, elements are found that are not present in the urine of normal pregnancy. These substances are markedly toxic, killing many of the experiment animals, and causing stupor and convulsions in others. The relations of these toxic substances to the cause of eclamptic attacks in women is not yet demonstrated.

Arterial Hypertension and Eclamptic Seizures.—J. L. Chérie (*Ann. de Gyn. et d'Obst.*, Feb., 1908) discusses the relation of high arterial tension to the eclamptic seizures of pregnancy and the puerperal state. He has made examinations of the tension in women both in normal and pathological states and finds that in pregnant women in a normal condition the arterial tension is normal, except during each pain, when there is temporary rise. In albuminurics also the author sometimes found the tension normal, but there seemed to be no constant relation between the tension and the amount of albumin in the urine. In some cases arterial tension falls with the removal of chlorides from the system and in others it rises. In menacing cases of eclampsia all authors agree that there is a rise of arterial tension, and that the tension continues high until the crisis of the disease is over, and as the condition improves it sinks. As soon as arterial tension rises in a pregnant woman the physician should fear a seizure. The author believes that this rise of tension is an expression of the acute intoxication, a symptom, and not a cause of eclampsia. He attributes considerable importance to this rise of tension in the production of the visceral hemorrhages that are found in eclamptic patients at autopsy. The capillary walls become altered and cannot resist the hypertension and hemorrhages result. These hemorrhages are most frequent in the liver on account of the peculiarly active circulation of that organ during gestation. The indication is to lower arterial tension in order to

avoid these hemorrhages. Venesection with withdrawal of considerable amounts of blood is useful. These facts are of prognostic value in pregnancy. As soon as a rise of tension is demonstrable measures should be taken to lower tension for fear of a seizure. Absence of high tension indicates safety for the patient even when albumin is present in the urine. The attack having passed, a renewed attack is presaged by a renewed rise of pressure. An enlarged heart is found in these patients coincident with the renal disease. The high tension is dependent on the condition of the urinary organs.

The Lower Segment of the Uterus.—Cyrille Jeannin (*Presse Medicale*, Feb. 15, 1908) distinguishes the lower third of the uterus from the other two-thirds of the body, in other words the isthmus, as the lower segment of the uterus. It is of importance in obstetrics, although not anatomically in the nonpregnant uterus. It appears only at the beginning of gestation, and at the end of gestation is seven to eight centimeters in width and about two millimeters in thickness. Its lower limit is the internal os. The upper limit is shown by the lessened thickness of the muscular wall, by the existence of a large circular vein, by being the lower limit of the firm attachment of the peritoneum to the uterine wall, by the situation of the first transverse branch of the uterine artery, and by being the limit of adhesion of the membranes of the fetus to the uterine wall. The anterior wall is much more distended by the fetal presenting part than the posterior, and is thinner. The cervical orifice is nearer the posterior than the anterior wall of the uterus. In front the inferior segment is in relation with the peritoneum and the bladder, which is pushed forward and becomes a concave structure with two lateral pouches. Laterally are the hypogastric sheaths containing the uterine artery. Behind, the peritoneum covers it and extends down into the cul-de-sac. The wall is constituted by the external and internal muscular layers, the middle layer being lacking. The mucous membrane does not differ from that of the rest of the uterus. The form of the inferior segment of the uterus differs with the fetal presentation. After labor it resembles a floating sac in the vagina. During pregnancy the inferior segment lends itself to the development of the fetus by stretching. According to some this is the cause of the beginning of labor. Artificial excitation of it by the use of a balloon is a most efficient means of bringing on labor. During labor it at first contracts, afterward remains inert. During pregnancy the implantation of the ovum on this segment is a cause of many abortions, and later of placenta previa and severe hemorrhages. During labor the adhesion of the ovum to this segment is a cause of very slow dilatation. Its thinness may result in uterine rupture.

Causes of Sterility.—Platon (*Gaz. de Gyn.*, Jan. 15, 1908), setting aside voluntary sterility, finds that the most frequent causes of sterility are sexual malformations, general diseases, and disease of the genital organs. Vaginismus, obliteration of the

cervix, congenital or acquired, and stricture of the canal prevent the entrance of the spermatozoa. Infantile uterus, accompanied by persistent amenorrhea, prevents conception. The author finds that this condition may be remedied by dilatation of the cervix and canal persisted in for months except at the menstrual period. In some cases this treatment has resulted in pregnancy. Acute or chronic inflammation of the uterus and adnexa will cause sterility. Salpingitis is generally accompanied by chronic ovarian inflammation and degeneration. Of the general diseases, chlorosis, albuminuria, diabetes, and obesity all predispose to sterility.

Relations between the Ovaries and the Uterus.—As a result of animal experiments, Frans Dalls (*Surg. Gyn. and Obst.*, Feb., 1908) believes that irritation in the area of the genitalia may produce a hyperemia of the uterus; this hyperemia is, however, to be distinguished thoroughly from rut or menstruation. Hyperemia is only one of the symptoms of rut or menstruation without possessing any causal significance. For the production of rut or menstruation, therefore, the ovaries do not act by the production of hyperemia of the uterus but by a specific influence, the latter being necessary for the beginning only of the phenomenon, not for its further development. In the present stage of researches the rôle ascribed to the corpus luteum for the excitement of rut or menstruation is to be regarded as a hypothesis only. In the pregnant guinea-pig and rat bilateral ovariectomy interrupts pregnancy in more than the first half of its duration. Several factors cooperate to cause this interruption. The internal administration of lutein after ovariectomy does not exert the slightest influence toward preserving pregnancy. At present the hypothesis of the specific function of the corpus luteum with regard to the imbedding and development of the ovum must be considered as being in disagreement with certain distinct clinical and experimental observations.

Ovarian Teratomata.—S. G. Shattock (*Lancet*, Feb. 15, 1908) proposes the following theory which may explain both the frequency of the ovarian embryomatous cyst and its particular location, a theory with which the occurrence of embryomatous cysts in the testicle is not incompatible and which at the same time is in harmony with their rarity. This theory is, that the ovarian teratoma results from the fertilization of one of the primordial ova in the ovary of the embryo, so that the embryo gives rise to a second imperfect individual whose origin is, therefore, not synchronous with but of later date than itself. It is the formation of one embryo within another, and the name suggested for the theory is that of epi-embryogenesis. With respect to the access of spermatozoa to the primitive ova, it is not necessary to suppose that a second penetration of the developing ovum takes place. More than a single spermatozoon may perforate the investing membrane of the ovum. It becomes thus quite conceivable that surplus spermatozoa may re-

main about the segmenting mass or morula, may become engaged between its component cells, and in this way be actually ready in the blastoderm to fertilize the primordial ova which are developed so soon after its lamination and the cleavage of the mesoblast which results in the formation of the body-cavity. The longevity of spermatozoa when under conditions not adverse to their life is a subject upon which little is known. Somewhat to the point, is the fact, that after a single impregnation the hen of the turkey will lay the entire succession of fertile eggs, about twelve in number, one egg being laid about every other day and the whole process extending over a period of about four weeks. Not only does this theory of an epifecundation of primordial ova in the ovary of the embryo explain the frequency and particular location of embryomatous cysts of the ovary, but it explains the multiplicity of such cysts in the same ovary and their occurrence in both the ovaries of the same patient. The theory, again, will account for the difference in color of the hair in multiple teratomatous cysts, or of the teratomata in cysts of opposite ovaries. For such differences become examples only of the differences in color so frequently seen in children born of the same parents, or still more closely in heterologous twins whose hair may be of different color. Nor does the difference in color between the hair of the embryoma and that of the patient offer any difficulty. The patient is, while yet an embryo, the mother of the teratoma; the father of the teratoma is the father of the patient. The color of the hair of the embryoma need not, therefore, resemble that of the patient, the mother; it might resemble that of the father, or it might not resemble either, but that of a more remote ancestor.

Histological and Pathological Processes in the Hydatid Mole.

—G. Durante (*Bull. de la Soc. d'Obstet. de Paris*, Nov. 21, 1907) says that the characteristic lesions in a hydatid mole are mucous edema of the villi, absence of fetal capillaries in the center of these villi, and an exuberance of the syncytium, which is filled with mucin forming many vacuoles. Molar degeneration may be localized or occupy the whole placenta—the vesicles occupying the extremities of the villi. A mole is generally sterile because the embryo has disappeared in the degeneration, or because the extraembryonal portion alone develops. A mole is compatible with the existence of a living fetus. The author has studied carefully three specimens of this growth. From these examinations he concludes that the vessels, when the syncytium begins to grow, present a proliferation of the capillary walls, the endothelium filling the lumen of the vessels and causing an obliterating endarteritis. Later interstitial edema appears, while the capillaries progressively disappear. Syncytial hyperplasia precedes interstitial edema. These lesions are the determining cause of the vesicular transformation of the villi. The office of the syncytium is to collect from the maternal blood the nutritive elements to be transmitted to the fetus by the capillaries of the villi.

When the vessels of the fetal capillaries degenerate the villi have no way of relieving themselves of the maternal nutrition. Hypernutrition of the syncytium causes hyperplasia. Imbibition of mucus which remains in the uterus dissociates the villous connective tissue and vesicles are produced at the extremities of the villi. The necessary conditions for the formation of a mole are complete capillary obliteration with integrity of the syncytium and of the maternal circulation.

Pathogenesis of Blood Mole of the Uterus.—Carlo Sirtori (*Ann. di Ostet. e Gin.*, December, 1907) bases his conclusions as to the origin of blood moles on the observation and microscopic examination of three cases observed by himself. The author believes that this tumor is the result of inflammatory action. The reasons for this belief are the separate growth of the fetal membranes after death of the fetus, the early hydramnios, the proliferation of the syncytium and cells of Langhans, and insufficient development of the fetal heart. The importance of inflammatory processes in the endometrium is well known. The mucous membrane, instead of receiving the ovum on a surface prepared for its reception, rather repels its approach and prevents its development. The maternal tissues are in a condition of bad functional activity and do not furnish to the ovum the material it needs for its nutrition. The barrier of the proliferated decidual cells opposes itself to the fetal elements and prevents the development of the trophoblast. These disturbances of nutrition are aggravated by circulatory disorders. Hemorrhagic effusions then give rise to the mole. The increase of the intraamniotic pressure, whether accompanied or not by hydramnios, caused by extravasation of blood into the amniotic cavity makes the mole protrude into the cavity of the ovum.

Serum Treatment of Puerperal Sepsis.—G. Bohnstedt (*St. Petersburger Med. Woch.*, Dec. 29, 1907) says that the severest form of puerperal fever is caused by the streptococcus; hence the attempt has been made to combat its ravages by the use of antistreptococcus serum. Marmorek's serum was used to immunize the patient, and was produced by passing the poison through animals. This passage lessened their virulence toward man, and thus rendered the serum useless for man. Tavel attempted to use a serum which had not been passed through animals. Here the many varieties of streptococci rendered the serum useless in many cases. Thus arose the polyvalent antistreptococcus serums. Puerperal fever is so varied in its symptoms and onset that it has been difficult to systematize the observed effects of the sera. Theoretically the septic process should be made worse by the injection of sera. The antistreptococcus serum of Galiritchewski is an antibacterial not an antitoxic serum. It acts on the capsules of the germs so as to permit of the action of alexins and complements in the patient's blood which kill the bacteria. The endotoxins or proteins of the cell body are set

free and must be neutralized in the blood. If there be enough complements in the blood to neutralize the total amount of poison set free the bacteria will all be destroyed and their poisons neutralized. This serum is useful in streptococcus infections and not in mixed infections. It has been found useless in infections complicated by bacillus coli, in old chronic sepsis cases, and in cases in which there are collections of pus in other organs. This serum of Galritchewski is no panacea for sepsis. The author has treated fourteen cases of puerperal sepsis, with three deaths, one from purulent peritonitis, one from septic endometritis, with septic endocarditis and infarctions of the kidneys and brain and septic changes in all the internal organs, the third from peritonitis. The author concludes that the serum is powerless against fully developed peritonitis of septic origin. He describes the cases successfully treated. The serum is useful to lower the temperature, but heart stimulants should be used. The kidney action is increased by the serum. The leukocytes are increased, while the red blood corpuscles are lessened in number.

Induction of Premature Labor for Visual Indications.—The changes in the eye in the albuminuria of pregnancy, says T. R. Pooley (*Amer. Jour. Surg.*, Mar., 1908), are essentially the same as those in chronic nephritis. There may be: 1. A sudden more or less transitory or complete loss of sight (uremic amaurosis) without appreciable changes in the fundus oculi. 2. A gradual failure, at first not complete loss or vision, with characteristic changes in the retina and optic nerve which in time may lead to blindness. The writer believes that in all cases of pregnancy, it is not only desirable to examine the urine from time to time, but also to examine the eyes with the ophthalmoscope, even in a routine manner, since a large percentage of cases having lesions of the optic nerve and retina, either have or make no complaint of loss of vision. Such lesions may lead after a long interval, through secondary or atrophic changes, to complete blindness. It is also to be borne in mind that varying degrees of blindness, which usually do not appear until the end of pregnancy, do not show that the retinal lesion may not already have been in existence for some time, and that the timely examination of the eyes might have saved sight and even life. Evidences of disease of the kidneys not infrequently show themselves in the eye before they do in the urine. In uremic amaurosis, without changes in the eye visible to the ophthalmoscope, even should the usual symptoms, such as dizziness, nausea and threatened convulsions, be absent, their occurrence is soon to be feared, and labor should be induced without waiting until the life, as well as the sight of the patient is in danger. Where neuroretinitis, with grave organic lesion of the optic nerve and progressive loss of vision is present, in the later months of pregnancy, and the child, if not dead from the effect of the kidney disease, may be viable, it is urgently demanded that premature

labor be resorted to. If the danger of delay is such that to wait until this time would be to doom the patient to blindness, the operation should be performed even in the earlier months. In those instances in which, in one pregnancy, affections of vision have occurred which have remained permanent, abortion or premature labor in following pregnancies may be rendered necessary. Prognosis as to the recovery of vision is better in cases in which chronic nephritis does not already exist. The induction of premature labor or abortion, both morally and legally, is justified in order to save vision as well as life. Women having once suffered loss of or impairment of vision during pregnancy, should have the danger of again becoming so, and the relation of cause and effect fully explained to both themselves and their husbands.

Etiology of Puerperal Retroflexion.—R. Olshausen (*Zent. f. Gyn.*, Jan. 4, 1908) says that retroflexion occurring in the puerperium is the result of the puerperal changes of the genital organs. This displacement always occurs after the first pregnancy, but recurs in the later puerperia. Occasionally retroflexion is present before pregnancy occurs. When the uterus is movable there has never been any peritonitis. In the first pregnancy the head is pressed down into the pelvis during the last weeks and months so that the walls of the uterus are very much thinned, the head being easily felt through the cervical walls. This does not occur in the later pregnancies. At the time of labor this thinning is increased. This the author believes to be the cause of the retroflexion. The filling of the bladder prevents the fundus from becoming ante-flexed, and the position of the patient on her back favors the tipping of the fundus backward, the thinned tissues having no resistance. An overfilled bladder and intestines will contribute to the pressure of the fundus backward. Primiparae should be examined a few weeks after the confinement to ascertain whether this displacement has occurred, and when it is found it should be at once rectified and a pessary put in place for a while. Such treatment will give a permanent cure.

GYNECOLOGY AND ABDOMINAL SURGERY.

Light as a Disinfectant.—K. Franz (*Zent. f. Gyn.*, Jan. 4, 1908) has experimented as to the value of light as a disinfectant in abdominal wounds in animals. If such disinfection of a wound can be obtained by exposing it to light before closure it may be possible to safeguard our patients against infections. Either the germs are killed by light or there is an increased reduction of leukocytes which destroy the germs. The source of light that was made use of was a uvioi lamp, which is a lamp in which light is produced by incandescence of a column of mercury under the action of a strong electrical current. The ultraviolet rays are made use of. The open abdomens of the animals were treated with this light for fifteen minutes before they were closed. A

much greater leukocytosis was obtained than in the animals not subjected to the light treatment. In other animals bacteria were inoculated into the peritoneum and then light was applied as before. Animals treated lived, while those not treated with light died of sepsis. The author believes he has proved the sterilizing action of this light on bacteria.

Results of Lumbar Anesthesia in Gynecological Operations.—Friedrich Brunner (*Monat. f. Geburt. u. Gyn.*, Nov., 1907) says that the immediate effects of the spinal injection of an anesthetic substance are a feeling of warmth, formication, and deafness. These paresthesiæ begin at the feet and spread upward. Then the sensations of pain, touch, heat, motility, and the reflexes are abolished. This results from the effect of the drug on the posterior nerve roots and trunks within the canal. The effect on the sensory fibers is greater than on the motor fibers. It is more severe at the lower segments, since the liquid is diluted as it mixes with the cerebrospinal fluid and passes upward in the canal. Occasionally there arise faintness, unconsciousness, sweating, trembling, nausea, cramps in the limbs, and dyspnea. Following the injection may occur weakness, pain in the back, vomiting, loss of appetite, and insomnia. These are the effects of a rapid penetration of the fluid to the medulla. The author has done with this form of anesthesia thirty small and large gynecological operations. He made use of a 5 per cent. solution of novokain and suprarenin. The duration of anesthesia was fifty to sixty minutes. Its onset began in from two to fifteen minutes after the injection. In four cases he got disagreeable effects, pain being complained of during the operation, and a small amount of chloroform being necessary to finish the operation. The author believes that there are disadvantages in this form of anesthesia as compared with general anesthesia. The latter is certain while the former is not. The mind of the operator is not at rest, as he fears bad effects and pain to the patient. A much more tedious disinfection of the patient is necessitated. The psychical effect of the things seen and heard during the operation is not good. The patient feels herself powerless. Occasionally there is abdominal pressure of the muscles by which the intestines are pushed into the operative field, or retching and vomiting set in. The author does not entirely condemn the use of this method of anesthesia but relegates it to cases in which general anesthesia would be dangerous on account of heart or other complications or in which the patient fears the effect of a general anesthetic. It is contraindicated in nervous, hysterical patients. It will be of little value in pregnancy and labor.

One Hundred and Fifty Gynecological Cases Operated on under Lumbar Anesthesia with Tropacocain.—Alfred von Valenta (*Gyn. Rund.*, Second Year, Vol. I) has had such good results from the use of tropacocain by lumbar anesthesia that he feels constrained to publish them. For two years he has made use of this method, and considers it a great step forward in medicine. The patient

should receive an injection of morphine before the operation and should have the ears stopped with cotton and the eyes bandaged so that sights and sounds may not disturb her. The 150 operations are tabulated and include operations of all kinds and of great severity in some cases, such as require ordinarily a long anesthesia. In 127 cases there was complete anesthesia until the end of the operation. In 17, anesthesia was not complete and in some of them narcosis was necessary to complete the operation. In six cases there was no anesthesia at all from the tropacocain, or it was not possible to introduce the needle. In fourteen cases there was increased pulse frequency; in three cases rise of temperature; in six cases collapse; in three cases sensibility or motion undisturbed; in six cases pain was present. No permanent bad effects occurred.

Early Uprising after Celiotomy.—Carl Hartog (*Zent. f. Gyn.*, Dec. 28, 1907) advocates permitting patients who have been subjected to celiotomy to rise after two or three days in bed instead of allowing them to remain in bed two or three weeks. He bases his opinion on 150 cases that he has treated in this way, among which are all sorts of severe operations on the abdomen. He believes that it has a better mental effect, preserves better the strength of the patients, allows the bowels to move naturally early in convalescence, lessens the number of catheterizations necessary, and gives the general condition of the patient less strain than the old method. He has had no bad effects from this early sitting up, no herniæ, and the patients have all left the hospital early and have not been obliged to wear a bandage. The patient is allowed to sit up in bed to pass urine on the second day. The wounds have healed by first intention. An aseptic result has always been obtained, the patient being kept lying down until the operator is certain that there will be no rise of temperature. This procedure is contraindicated in herniæ and in plastic operations. It is of especial importance in diabetic patients.

Membranous Dysmenorrhea and Fibrous Polypi.—Paul Dalche (*Gaz. des Hôp.* Feb., 6, 1908) discusses the production and symptoms of membranous dysmenorrhea. The pain in such cases increases through the first three days of menstruation. The flow is then arrested, severe cramps ensue, with the throwing off of a cast of the uterus, and menstruation then goes on as usual for some days. Sterility is a habitual consequence of this condition. The sac thrown off is composed of the exfoliated mucous membrane of the uterus. The author finds in such cases a displacement of the uterus in the form of flexion or version, which prevents the free flow of the blood from the uterus. Thus the congestion of the uterus is increased. The tension in the vessels is increased and they rupture. Capillary hemorrhages occur which cause the uterine mucous membrane to be thrown off. The treatment consists of palliative drugs for the pain and treatment of the cause. A slow dilatation of the cavity is necessary, followed by curettage, the uterus being maintained after-

ward in a normal position. Fibrinous polypi are another cause of hemorrhage. They result from the débris of an abortion or other blood clot in the uterus which increases in size, and then becomes organized. Such polypi are very easily detached. They may be seen and grasped just within the cervix. When not removed they constitute a good culture medium for pathogenic germs. The treatment consists of removal and careful cleansing of the base of the polypus.

Tuberculosis of the Neck of the Uterus.—Deletrez (*Ann. de Gyn. et d'Obst.*, Jan., 1908) goes over the history of a case of tuberculosis of the cervix uteri in a young woman. This is a very rare localization of tuberculosis. It is possible that this rarity is only apparent and that it would be more frequently recognized if the specimens after operation were more carefully examined for the tubercle bacillus. It is most frequent in the active period of sexual life, that is from the age of eighteen to forty years. Contagion of genital tuberculosis between husband and wife is rarely observed and generally among the very poor. Traumatism may create a point of least resistance but can have no other influence on localization of the bacillus in this region. Primary tuberculosis of the cervix is characterized by hyperplasia of the tissues, while ulceration is characteristic of the descending and secondary form. There are two important signs of primary cervical tuberculosis; one, the presence of numerous vegetations about the os that recall those of cancer. These are absent in the secondary form, in which there is rather a circular infiltration of the cervix. Amenorrhea is frequent in primary tuberculosis. There must be found no other localization of tuberculosis, a condition which is difficult to establish. Secondary, descending degeneration is certainly more frequent, and is a complication of pulmonary or peritoneal tuberculosis. Clinically, uterine tuberculosis simulates metritis accompanied by ectropion and erosions of the cervical mucous membrane, syphilitic chancre, or cancer of the cervix. There seems to be an antagonism between cancer and tuberculosis. Prognosis varies with the location of the lesion, its form, and its localization in other organs. Recurrence is frequent. Treatment consists of vaginal or abdominal hysterectomy. If there is little tubercular tissue amputation and cauterization of the cervix may be sufficient.

Uterine Perforations—Louis Riche (*Jour. de Méd. de Paris*, Feb. 15, 1908) says that all sorts of instrumentation have produced uterine perforations, and it is perhaps better to refrain from the use of instruments entirely. There are uteri which are predisposed to perforation. Such are malformed uteri. Physiological changes also give rise to a predisposition to perforation. During the menstrual period the uterus is softened and friable and easily perforated. Multiparity, pregnancy, and extrauterine pregnancy all predispose to perforation, as does subinvolution postpartum or postabortum. Versions, flexions and adhesions all prevent uterine walls from accommodating themselves to

instruments. Chronic inflammations, tumors, metritis, stenoses, polyps, cancers, and moles all add to this category. Sometimes this accident occurs without symptoms. The surgeon feels a sensation of penetration of the instrument to a great depth and of yielding of the tissues. Pain is not felt if anesthesia has been used. Hemorrhage, and collapse with signs of internal hemorrhage may occur. But in most cases this sign is lacking. Perforation of the omentum and of the intestine are not rare complications of uterine perforation. The failure of an injected liquid to return from the uterus may be the first cause of alarm. Emphysema of the pelvic wall may occur. Expectant treatment is indicated if there is no hemorrhage and if the uterus is aseptic. There may be healing of the wound without any peritoneal reaction. Complete immobilization and ice to the abdomen are the indications for treatment. No douches should be used and drainage should be assured. Opium should not be employed. Tenderness of the abdomen, or rise of temperature indicates interference. Laparotomy and removal of the uterus may be necessary.

Obliteration of the Tube after Resection.—I. Rousse (*Bull. de la Soc. Belge de Gyn.*, Vol. XVIII, No. 3) believes that we are justified in sterilizing a woman by operations on the Fallopian tube whenever conditions exist that will render future pregnancies dangerous to her life. In other conditions and for expediency only he considers this procedure unjustifiable. The simplest operation to cause sterility is a resection of the tubes or a simple section between two ligatures. Some authors have called in question the value of this operation for producing permanent sterility because in a few cases pregnancy has occurred after it had been performed, and they maintain that the closure of the tube is not lasting. The author thinks that these observations must have been the result of faults in technic. He has experimented on animals, sterilizing them in this manner and has examined the tubes removed after some interval. He has always found them permanently closed by a conglomerate tissue. He has also examined three tubes removed at a second operation after the tubes had been ligated previously. These three specimens of tubes also showed a permanent closure, the stumps forming fibrous cords. The ends of the tubes may be sewed beneath a fold of peritoneum if it is thought best. The procedure is very easy of execution.

Non-infectious Diseases of the Adnexa.—H. Roulland (*La Gynecologie*, Jan., 1908) considers that inflammations of the adnexa that do not arise from infections are deserving of more interest than is usually shown. They are not at all uncommon in unmarried women who have never had illicit intercourse. There occur excessive hyperemia of these organs, active congestion, follicular hemorrhages, degeneration of the ovaries of sclerotic nature, hydrops, cysts, hematmata, and painful conditions. The uterus and adnexa are erectile organs and subject to conges-

tions from physical and emotional causes. Active congestion occurs at puberty, at the menstrual periods, and in the intervals between them. These may result in inflammatory reactions and cause adhesions of these organs. Sclerosis of the parenchyma of the ovaries may occur. Simple aseptic hemorrhagic exudates may produce organized adhesions agglutinating the pelvic structures. Painful intermenstrual congestions occur about ten or twelve days after menstruation, and these result in sclerotic degeneration of the ovary. Sclero-cystic conditions are also found at operation. They are found in children, during the sexual period, and in old women as well. The pathogenesis of these lesions is found in an ascending metritis or salpingitis. Uterine deviations and prolapse are potent factors in the production of these lesions.

DISEASES OF CHILDREN.

Bacterial Infections of Urinary Tract in Childhood.—Though bacilluria in children may be due to infection through the blood stream or by contiguity, its common cause, says C. R. Box (*Lancet*. Jan. 11, 1908), is an ascending infection. The chief arguments in favor of this view are the sex incidence of infections of the urinary tract, the larger number of cases occurring in females in whom the urethra is shorter and nearer the anus than in the male, the absence of evidences of renal damage, and the frequent finding of bacillus coli as the exciting cause in bacilluria associated with typhoid fever, scarlet fever, measles and diphtheria. Ascending infections are more common in childhood than is ordinarily supposed and the colon bacillus is the usual cause, hence the necessity of avoiding infections from soiled napkins. The possibility of the presence of pyelitis should always be borne in mind when dealing with cases of obscure fever in childhood, whether of a sustained, remittent, or relapsing character. The occurrence of shivering or of rigors should especially direct attention to the urine and urinary tract. More than one specimen of urine should be examined, as it is not every portion obtained which shows characteristic changes. Cystitis is not uncommon in children. Its onset is usually sudden and not attributed to any definite cause. Pain is referred to the hypogastrium, fronts of the thighs, or perineum. It is important to recognize that the urine may be acid in both pyelitis and cystitis, especially when the infection is due to the colon bacillus. Incontinence of urine, often very obstinate, may be associated with bacilluria, the bacillus coli being the most common organism. In such cases the presence or absence of thread-worms should always be determined. The writer had been disappointed in their treatment with belladonna, drugs of the formalin type, cathartics, salol and others. The antibacillus coli serum after three injections stopped the incontinence in one case though the bacilluria continued. A month later the patient relapsed to one incontinence

a week. In another patient serum treatment by subcutaneous injection and by rectum and vaccinations were ineffectual.

Etiology of Epidemic Poliomyelitis.—Analyzing 509 cases of this affection, W. Sinkler (*Arch. of Diag.*, Jan., 1908) finds that 418, or 82 per cent., occurred during the months June to October inclusive. A large majority of cases of sporadic poliomyelitis occur during the summer months, and all of the epidemics which have been recorded, in which the season of year of the occurrence is given, took place in hot weather. The nature and progress of the disease indicate clearly that it is due to an infection. It is obvious, therefore, that the microorganism which produces the infection, is one which is developed by hot weather. A large proportion of cases have some form of intestinal trouble. It seems probable, therefore, that the microorganism producing the disease has found its entrance into the system through the intestinal tract and thence to the spinal cord.

Anterior Poliomyelitis.—H. W. Berg (*Med. Rec.*, Jan. 4, 1908) believes that sporadic poliomyelitis anterior and so-called epidemic poliomyelitis anterior, or, rather, as he would term it, epidemic meningomyeloencephalitis, are radically different diseases; the latter including among its extensive neurological lesions the pathological changes characteristic of sporadic poliomyelitis anterior. The clinical manifestations of the two diseases differ as markedly as is necessitated by the widely different pathological changes characteristic of each. The two conditions, moreover, differ in their morbidity, in the ages of the patients for which each of the conditions has a predisposition, the sporadic disease being found in children almost exclusively, the epidemic disease affecting adults and children. They probably differ, moreover, in a very important characteristic, for sporadic poliomyelitis anterior cannot be considered an infectious disease, while epidemic meningomyeloencephalitis may be, although positive proof of its infectious nature is still lacking.

Tuberculin Eye Test.—An editorial (*Arch. of Ped.*, Feb., 1908) speaks of the value of the tuberculin eye test of Calmette in the diagnosis of obscure or doubtful cases in children in whom it is inadvisable to employ the injection or cutaneous inoculation of tuberculin. It is available in cases of latent tuberculosis, lymph node tuberculosis and tuberculous meningitis. One drop of a freshly prepared 1 per cent. suspension in water of dried tuberculin which has been precipitated by 95 per cent. alcohol is dropped into the conjunctival sac of one eye, making sure that both eyes are free from conjunctivitis or any other affection. After from three to five hours there appears congestion of the palpebral conjunctiva, which becomes bright red and somewhat swollen. The sac swells, reddens and has a slight fibrinous exudate upon it. The congestion and injection increase and lachrymation ensues. The fibrinous exudate becomes more abundant and, at the end of about six hours, gathers in threads in the lower conjunctival sac. The height of the reaction is reached

in from six to ten hours, but the patients make no complaint of pain and have only a little discomfort. There is no chemosis and the body temperature is not elevated. The opposite eye is used for comparison and the condition in the conjunctival sac or caruncle is to be particularly noted. After eighteen hours in children, or from twenty-four to thirty-six hours in adults, the congestion diminishes and soon disappears. There is no reaction in patients who do not harbor tubercle bacilli or, at most, from one to three hours after the instillation, a slight redness unaccompanied by any fibrinous exudate. The reaction fails with patients who are in the last stages of tuberculosis, in those who are very anemic, much enfeebled or moribund, and in young infants—those under nine months of age. In infants and very young children a positive reaction usually means tuberculosis; a negative is of great value in all cases.

Diagnostic Value of Examinations of the Feces for Tubercle Bacilli in Infants with Pulmonary Tuberculosis.—Nicole Serio-Basile (*La Pediatria*, Dec., 1907) records his observations made to ascertain the value of examinations of the feces for the tubercle bacillus in infants too young to expectorate, and who consequently swallow the sputum. He finds that the bacilli may pass through the entire length of the intestinal canal without losing their morphological appearance or staining power. When they are found to be present they are of diagnostic value as showing the presence of the tubercle bacillus either in the respiratory or the digestive organs. If they are in the lungs the number of bacilli found will be small. When there is a lesion in the intestines a larger number will be found. They may be entirely absent from the feces of children who have pulmonary tuberculosis, hence their absence from the feces will not exclude tuberculosis. As negative evidence their absence is valueless. The technical difficulties of this sort of examination are very great.

Treatment of Tuberculosis of Lymph Nodes in Children.—Francis M. Pottenger (*Pediatrics*, Feb., 1908) says that in most instances tuberculosis is primarily a disease of the lymphatic glands, and this infection in many instances begins in early life, though the disease may not manifest itself until adolescence or adult life. Tuberculous lymphatic glands cannot be looked upon otherwise than as a menace to the individual possessing them. When the lymphatic glands, which are visible, are infected it is probable that others deeper seated are also infected. Surgical removal of visible tuberculous glands does not cure the infection. It simply removes those glands which are in view, and is followed by recurrence and extension of the disease so often that it is not a satisfactory method of dealing with the disease. The cure of tuberculosis of the lymphatic glands, the same as the cure of tuberculosis wherever found, is brought about by the specific immunizing properties of the blood brought to play upon the infected areas. Where the disease heals spontaneously, the increase of the specific immunizing bodies is brought about by

auto-inoculation from the seat of infection. Owing to the fact that auto-inoculation is irregular, and cannot be depended upon, artificial inoculations should be used which, when properly spaced and properly regulated as to dosage, will produce the same stimulation, and thus raise the amount of protective bodies in the blood. These should be used combined with all rational measures for raising the patient's resisting power, such as good food, open air, and carefully regulated life. Tuberculosis of the lymphatic glands in children should be considered seriously and treated before the disease is allowed to extend to other structures.

Parker Syme (*Pediatrics*, Feb., 1908) discusses the surgical treatment of tuberculous glands of the neck. He claims that complete obliteration cannot be assured by the so-called radical operation; that this is more likely than conservative treatment to cause dissemination of the disease; that it gives the greatest possible scar; that it does not conserve the patient's strength more than other procedures since tuberculous patients withstand operation poorly, and that it does not insure prompt cure without recurrence. While the radical operation must be resorted to in some cases, the large majority of patients may be safely and successfully treated by hygienic measures, as in other tuberculous affections, combined with slight operations which aid in effecting a spontaneous cure. If the enlarged glands are apparently not broken down, the skin of the region should be thoroughly anointed every night with a 10 per cent. ointment of ichthyol. removed in the morning with soap and water. If one or two of the glands are decidedly larger than the rest, and persistently remain so, or show a tendency to increase and not to diminish, it may be well to make a small incision and remove them. If any of the glands show evidence of having broken down either by cheesy degeneration or abscess formation, they should be opened before they have ruptured their capsules. Their cavities should be thoroughly curetted and kept open by a drain of gauze or rubber tissue for a few days, and then they should be treated with a 10 per cent. emulsion of iodoform in glycerine.

Typhoid Fever in Children.—Speaking of the characteristic features of typhoid fever in children, P. F. Barbour (*Amer. Pract. and News*, Jan., 1908) says that the essential difference between typhoid in the very young and in the adult is that in the former ulceration of Peyer's patches does not take place or, if so, to only a very limited extent. At the end of the first week healing takes place instead of ulceration and recovery occurs usually in from fourteen to eighteen days. Hemorrhage and perforation are rare in young children. The onset in children may be gradual or abrupt. Vomiting is much more common and the pulse is comparatively more rapid than in the adult. Tympany is not so marked in the young and the stools are rarely of the "pea soup" type, more often consisting of curds and mucus with an offensive odor. Constipation is more common than diarrhea. The child is more apathetic. Headache, though frequent, is not often

complained of. Nervous symptoms like meningitis may arise. Exhaustion of the nervous system is sometimes evidenced by aphasia lasting several weeks. True delusional insanity some times occurs. Bronchopneumonia and hypostatic pneumonia are possibilities. It is safe to call any continued rebellious fever in children typhoid until its nature is proved. The writer favors the treatment of typhoid by salines combined with antiseptics, such as the sulphocarbolates. There can be, he says, no advantage in retaining in the intestinal canal a putrefying mass, the toxins from which are being absorbed. Children do not bear tubbing well. Sponging is usually all that is necessary and for that the water may be warm.

As showing that typhoid fever is not as uncommon in infancy as has been claimed, J. P. C. Griffith (*Arch. of Ped.*, Jan., 1908) reports three cases occurring during the first year of life.

Otitis Media and its Treatment.—E. C. Ellett (*Amer. Jour. Med. Sci.*, Jan., 1908) advises the use of a head-mirror of about eight-inch focus and a large opening. Unless wrapped in a sheet, children should be held in the following manner: To examine the right ear, seat the child sideways on the nurse's lap, with its left side against the nurse's body. Pass the child's left arm around the nurse's body under her right arm. The nurse's right hand grasps the child's right hand and right thigh, holding both firmly, with the thigh flexed on the body. The nurse's left hand is pressed on the child's right parietal region above the ear, and the head is pressed firmly against the nurse's body. A child's ears should be examined, leaving out of consideration the very obvious cases when the patient complains of a pain in the ear, daily, or at least frequently, in measles, whooping-cough, chickenpox, pneumonia, and acute bronchitis. In scarlet fever, and febrile conditions of obscure and not readily explained origin, the ears should be examined daily. A sudden rise of temperature in scarlet fever is often of otitic origin, and suppuration may occur without complaint on the part of the patient of pain in the ear. Acute otitis media may simulate serious meningeal or gastro-intestinal disturbance. If the drum is simply red, inspection of the nose and throat, renewed care of the skin and the secretions, protection from cold, and possibly inflation with the Politzer bag would be in order, and if any pain is complained of, a warm application to the ear is grateful. This may vary from a shawl or warm flannel pad to a hot water bag. If the drum is red and bulging but the fever is not alarmingly high and there are no complaints or evidence of pain and no cerebral or gastro-intestinal irritation we may temporize. The nose and throat should be cleansed with a warm alkaline spray or douche, the bowels opened with calomel and the child protected from exposure. To the ear we can apply dry heat continuously or moist heat by water at 110° to 115° F. run into the ear from a fountain syringe one or two feet above the latter, using about two quarts each time.

then drying the ear and applying heat externally. If drops are used the writer would prefer warm 10 per cent. carbolized glycerin to the usual mixture of laudanum and oil. He often gives a single full dose of opium. If these measures fail to relieve in twelve hours or if the symptoms are severe when first seen the drum should be incised under general anesthesia or local anesthesia with a mixture of equal parts of cocaine, menthol and carbolic acid applied with cotton on an applicator. After incision, or if a discharge is coming from the ear when first seen, sterile cotton should be kept in the ear and changed frequently, syringing with boric acid only if the discharge becomes thick. Sudden elevations of temperature to 104° or 106° F. with intermissions of apparent health after sudden falls to normal suggest primary thrombosis of the jugular bulb. These or mastoid pain or persistence of pains or temperature after the ear has begun to discharge, call for expert advice.

Digital Methods of Extubation.—J. R. Clemens (*Arch of Ped.*, Feb., 1908) describes two methods. In Renault's, the child sits on the side of its bed while the nurse pinions its arms. The operator, kneeling on one knee and facing the child, embraces the head with his left hand (the thumb in front, the fingers on the occiput), while with his right hand encircling the child's neck (thumb in front, fingers on nape of the neck) he feels with the pulp of his thumb for the lower end of the tube, bending the head at the same time gently backward with his left hand. When the lower end of the tube has been defined, the right thumb expresses it gently upward until it reaches the lower end of the cricoid cartilage. Without altering the relative positions of the hands the trunk is flexed on the thighs (the head remaining in the position of extension) and the tube, by the forward swing of the body, is thrown into the mouth, where it must be searched for with the fingers if the child keeps its mouth shut. In Marfan's method the child is placed on a table on its abdomen in such a manner that the head and neck clear the edge of the table, while a nurse keeps the body and legs down on the table so that they do not slip forward. The operator supports the child's head with his left hand so that his thumb is on the right temporal fossa and his fingers on the left. His right hand embraces the neck, the thumb on the nape of the neck, the pulp of the index finger on the tissues of the sternal fourchette, the other fingers being folded in the palm. With the left hand the operator then bends the head gently backward, while with the index finger of his right hand he gently palpates for the lower end of the tube in the sternal fourchette. When this has been felt the head is gently flexed with the left hand as the tube is expressed into the mouth. Renault's method is inferior because the position of the operator is constrained and the child less under control, while the thumb is less sensitive than the index finger, and also because the tube may be swallowed or fall back into the larynx.

Primary Latent Diphtheria in the Middle Ear.—Olimpio Cozzolino (*La Pediatria*, Dec., 1907) records a condition that is considered by many authors to be rare, the occurrence of primary latent acute diphtheria of the middle ear. Very few cases of this nature have been published. Perhaps more would be found were the examinations of the secretion from the middle ear made more systematically. In the author's case the child had adenoid vegetations of the naso-pharynx, hypertrophy of the tonsils, and glandular swellings of the neck. The beginning of the illness, following a time of comparative good health, was characterized by the occurrence of pain in the ears and swelling of the tympanic membranes. They became injected and paracentesis showed a white membrane covering the structures within the middle ear. When a portion of this membrane was removed and examined it was found to contain no Klebs-Löffler bacilli but only streptococci. The examination of the secretion from the naso-pharynx also contained no diphtheria bacilli. The case was cured by the use of antidiphtheritic serum which rendered the child's general condition immediately better, but did not cause the disappearance of the membrane. The serum was then used by instillation into the ear through the tympanic wound and a cure was rapidly established. The author believes that further examination of the membrane would have shown the presence of the diphtheria bacillus. The presence of the membrane, which on removal disclosed a bleeding surface, the absence of exudate in the throat, and the disappearance of the membrane and the general symptoms on the use of antitoxin are considered sufficient evidence of the diphtheritic nature of the lesion.

"Diphtheria of the Skin."—A girl of thirteen was seen by A. B. Slater (*Lancet*, Jan. 4, 1908) three years after being treated for inflammation of the eyes. A week or two after this affection the mother had observed a white patch on the inner surface of each labium with a thin discharge. Vesicles soon after appeared around the vulva and rapidly extended, nearly covering the body and neck while a few appeared on the face and head. Mercury and iodides were given for two years without much effect and lotions of all kinds proved useless. When seen by the writer there were masses of vesicles around the left side of the mouth and cheek, on both eyebrows and around and in both ears, also on the head, neck, shoulders and upper part of the chest and back. Between the vesicles the skin was dark red. The vulva was erythematous and studded with vesicles, extending a short distance down the thighs and up the abdomen. A constant dripping of clear fluid occurred from all these areas. There were no constitutional symptoms, the spleen was not enlarged; the heart and urine were normal. Bacteriological examination, including animal inoculations, showed the presence of the Klebs-Löffler bacillus. Repeated subcutaneous injections of 2000 units of diphtheria antitoxin caused rapid dis-

appearance of the eruption, which tended to recur in spots when the injections were withheld. The antitoxin at first caused an erythematous eruption and constitutional symptoms. In addition to this treatment the vesicles were painted with carbolic acid, one part, in alcohol, twenty parts. Seventeen days after the first injection an incubated culture from the only discharging spot remained sterile. The writer says that the disease apparently commenced as an acute attack of diphtheria, the primary seat of infection being the eyes. From this focus the vulva became infected and then the bacteria in some way found their way into the superficial lymphatic circulation, producing a condition resembling herpes, probably as the result of peripheral neuritis set up by the bacilli themselves. Whether staphylococci played any important part is difficult to say, but they probably had only a mild influence, if any at all, as the use of various lotions, such as 1 in 40 carbolic lotion, and bichloride of mercury 1 in 1500 had no effect on the lesions, whereas the effect of the antitoxin was remarkable.

Diphtheritic Paralysis.—M. H. Chéné (*Gaz. des Hôp.*, Jan. 25, 1908) says that the diphtheritic toxin in producing paralysis reaches the nerve centers in all probability by an ascending course through the peripheral nerves to the brain. It is difficult to say whether diphtheritic paralyzes are of bulbar origin, neuritic, or cardiac. There are constant myocardial lesions found at autopsy and few evidences of nervous alterations. This would lead us to believe in the cardiac origin of the troubles. Prognosis depends on the extent of the paralysis, the general form being more likely to be fatal than those that are localized in the palate. Early cases, occurring within a few days of the beginning of the disease, are less frequently cured than those beginning later. When albuminuria occurs in the course of the disease the paralysis will be fatal. Early heart symptoms are unfavorable. Sudden paralyzes are also fatal. Those that come on slowly at a later date are favorable. Treatment involves injections of antidiphtheritic serum, at the appearance of the paralyzes, in small doses and repeated several times. Cardiac symptoms must be combated by camphor and faradization of the pneumogastric nerve.

Scarlet Fever.—Louis Fischer (*Jour. Amer. Med. Assn.*, Dec. 28, 1907) calls attention to the difficulty experienced in private practice in keeping older children in bed and in convincing the parents of the necessity of keeping them there for several weeks after a normal temperature has been reached. Some of the worst cardiac symptoms are seen in cases of the mildest type. In scarlet fever the heart action and pulse should be watched much more closely than the temperature.

Necrotic Anginas and Perforations of the Soft Palate in Scarlatina.—P. Lereboullet (*Le Prog. Méd.*, Feb. 8, 1908) describes a complication of scarlatina, occurring among young children, of which he has observed five cases. There is an

exudation resembling diphtheritic membrane over the tonsils, the examination of which shows no diphtheria bacilli, but only streptococci, which seem by an especial virulence to be the cause of the exudation. The fever is high, the glands may be enlarged, and the general condition is bad. After some days the membrane clears up and leaves a necrotic area on one or both tonsils which may extend to the pillars of the fauces, soft palate, and roof of the mouth. The palate may be ulcerated and perforated. The larynx is never involved, but the nasal fossæ may participate in the exudation, and a coryza appear. Difficulty in deglutition and phonation are absent. The tissues show little inflammatory reaction, and repair, when it occurs, is rapid. The complication generally ends fatally. The author believes that the streptococci are responsible for these effects. Treatment is general, with lavage of the affected parts with hydrogen dioxide or antiseptic solutions.

Seroimmunization and Serotherapy in Measles.—Cenci Francesco (*Riv. di Clin. Ped.*, Dec., 1908) describes his researches in an epidemic of measles as to the possibility of producing immunity by the injection of serum from a recovered case of the disease. He injected four children with the blood serum drawn from the veins of a healthy man who had recovered from measles. The brothers of these children were not injected. All the children being exposed to the disease in the same surroundings, none of the injected children had the disease while the other did take it. This immunity continued for four months. In an epidemic of measles four years later these children did contract a light form of the disease showing that only a temporary immunity was obtained. One of the children was vaccinated with the scales from a case of measles, but this had no effect. The author also injected cases of measles with antidiphtheritic serum to observe the results. Fever was lessened and shortened, there was a cessation of the inflammatory symptoms referable to the respiratory organs, and the general condition improved. In a case of bronchopneumonia with much prostration the child was feverless after forty-eight hours and was soon cured. Here antimorbillous serum was injected at the same time with the antidiphtheritic serum.

Rest Treatment in Chorea.—John Ruhräh (*Arch. of Ped.*, Feb., 1908) finds a rest treatment the best for chorea and an increase in weight most important. He keeps the child in bed, however slight the movements, until they have ceased entirely and weight has been gained. The mild cases are moved into the sun room during the day; the more severe are isolated. At first a milk diet is employed for several days until other food is asked for or the digestion seems good. Then solid food is added gradually. The bowels are kept open, beginning with a dose of castor oil and later using enemata or drugs. Little medication is given; dilute hydrochloric acid if the tongue is coated; iron for anemia, either Bland's pill or solution of iron

and manganese peptonate; arsenic only for anemia; salicyl derivatives if there have been rheumatic symptoms. In mild cases the movements cease in two or three days; in average cases, in a week or ten days; in severe cases, in two to three weeks. The patient is kept in bed until all choreiform movements, tested by holding out the arms with fingers extended, have disappeared, and until weight has been gained. The child is put back to bed if movements return. In the last forty cases only one was not cured.

Infantile Splenic Infection with Leishman-Donovan Bodies.—C. Nicolle and E. Cassute (*Presse Méd.*, Feb. 8, 1908) describe some observations made by them in cases of splenic infection in children similar to the so-called kala-azar which is seen in adults in tropical countries. This rare disease begins with fever, progressive anemia, extreme emaciation, digestive troubles, and hypertrophy of the spleen. In the spleen, liver, marrow of the bones, and glands is found a parasite called the Leishman-Donovan body. It consists of a rounded, unpigmented organism, having two chromatic bodies within it. It is found within the cells. Diagnosis of the disease can be made only by puncture of the liver and examination of the specimen obtained. The disease is not found in France or other European countries. But the authors have observed similar symptoms and similar parasites in a small number of cases among children in the French possessions in Africa, and consider it possible that cases may be imported from there into France. The disease observed by them attacked only children under two years of age. It was fatal in every case so far observed. The author believes that there is a special form of infection of children of the Mediterranean region similar to kala-azar, from which it is to be distinguished by the age of the victims, and which is identical with splenic anemia of children.

Epidemic Pemphigus of the New-born.—Maurice Rivière (*Gaz. Hebd. des Sic. Méd.*, Jan. 12, 1908) describes a small epidemic of eight cases of pemphigus which occurred in the Maternity Hospital of Pellegrin. The author believes that the infection causing this epidemic entered by way of the umbilicus, and was communicated by means of unsterilized ligatures that were used for the ligation of the umbilical cord. The umbilical wound suppurated in six of the infants that had the pemphigus and four of these infants had catarrhal ophthalmia. There was no effect on the general condition of the children who remained apyretic and the nutrition did not suffer at all. The bullæ never appeared on the palmar or plantar surfaces, but generally in the neighborhood of the umbilicus, the axilla, shoulder, and neck. There were no syphilitic symptoms in any of these children or in the mothers.

Painful Abdominal Paroxysms in the Course of Purpura of Infants.—M. L. Guinon (*Rev. Mens. des Mal. de l'Enf.*, Dec., 1907) says that we no longer consider purpura as a disease but as a syndrome common to different affections. We may divide

this condition into four forms; purpura rheumatica, with the eruption, rheumatoid pains, and mild gastro-intestinal symptoms; primary infectious purpura, characterized by ecchymoses, mucous membrane and visceral hemorrhage, elevated temperature and sepsis; Werlhoff's disease, with a sudden onset, and general good prognosis; and Hennoch's fulminating purpura, fatal in twenty-four hours, and frequent in infants. The form discussed by the author begins with sudden, intense abdominal pains, vomiting of blood, and diarrheal stools also streaked with blood. The crisis passes and a fresh purpuric eruption occurs. The paroxysms are repeated sometimes for months or years. There are retracted abdomen, meteorism, normal percussion sound, and a slightly elevated temperature. The internal hemorrhages may be severe. Cutaneous eruption may be entirely absent or may be marked. Edema of certain parts of the skin may be marked and urticaria may be present. The attack may end by perforation with peritonitis. An exploratory laparotomy may be necessary in order to make the diagnosis. The prognosis is relatively good. Rare autopsies show hemorrhages and ulcerations in the intestinal canal. The blood shows no changes. Today it is generally admitted that the condition is a toxi-infective one with a selective action on the nervous system. The seat of the trouble may be the medulla. Treatment consists of warm moist applications to the abdomen, morphine, and chloride of calcium to combat hemorrhage.

Early Recognition and Treatment of Rachitis.—T. S. Southworth (*Jour. Amer. Med. Assn.*, Jan. 11, 1908) urges the necessity of an earlier recognition of rachitis, calls attention to the dangers with which it menaces the child and to the immediate importance of instituting special dietetic measures, and asks for a further consideration of the special value of phosphorus in cutting short the active and progressive stage of the disease. Except during the hot summer months or during an intercurrent attack of diarrhea he gives cod-liver oil with this. He says that to those whose knowledge of rickets is derived from books or from the advanced cases presented in clinics, more especially by the orthopedic surgeon, the term suggests primarily a large square head, narrow chest, marked rosary, pot belly and bowed legs, enlarged epiphyses, delayed dentition, head sweating, open fontanel and lumbar kyphosis. One must be on the watch for cases which present but few of these classical symptoms and not be misled by the prominence of associated symptoms, such as obstinate constipation, chronic intestinal indigestion, convulsions or bronchitis. Enlargement of the costochondral junctions, commonly known as beading of the ribs or the rachitic rosary, is probably the most constant sign of all.

Alimentation of the Sick Infant.—Séverin Lachapelle (*Jour. de Med. et de Chir.*, Vol. III, No. 2) advises that we consider the amount of alimentation of the sick infant that is necessary to continue his growth, to combat the periods of infection that he must pass through, and the complications that follow them

and to return him to vigorous health with the microorganisms so eliminated that no relapses will occur. To this end we must feed him more than is usually done in sickness. Owing to the anorexia of fever, food cannot be given by mouth. The rectum must then be employed. We may inject eggs and broths, and make use of suppositories of peptone powders. As medicaments we should add the glycerophosphates and lecthin. We shall thus obtain enough nourishment to keep up the strength of the little patient until his stomach no longer rebels and he can be nourished in the ordinary way.

Nursing During Acute Illnesses of the Mother.—G. Guidi (*Riv. di Clin. Ped.*, Dec. 8, 1907) concludes from his observations extending over a period of thirty years that there are few acute diseases which prevent a mother from nursing her child and that it is wrong to separate the child from its mother. The patient should be watched carefully as to the effect it is having on her general condition, and the child should remain with her only when it is nursing. The mother should be nourished so as to keep up the supply of milk necessary for the infant. Stopping the nursing has a bad effect on the mother as well as on the child. There are unknown means of defense against contagion in the mammary gland and in the milk for the infant. Although the germs may pass into the milk they seem to have no unfavorable effect on the child. Clinical observation confirms experimental results. The bacteria lose their virulence, the milk causing its attenuation. The infant's organism may react by the formation of antitoxic substances which neutralize the products of the bacteria.

Toxicity of Human Milk.—Raymond Francois (*Jour. de Méd. de Paris*, Feb. 6, 1908) states that he has observed cases of nursing infants who were unable to nurse their own mothers without vomiting the milk, but who were well able to take the milk of a wet nurse or to get along on artificial feeding. These cases he believes to have been due to the carrying over into the mother's milk of minute amounts of poisons generated in the system of the mother by different forms of auto-intoxication. Constipation, dyspepsia, pregnancy and other such influences contribute to render the milk toxic. It has been shown that diphtheria antitoxin, coloring matters, and other materials are carried over into the milk in this way. Treatment of the mother would be indicated in these cases rather than that of the infant.

Sterilized Milk for Infants.—Observations for over five years on about 25,000 infants have convinced E. M. Sill (*N. Y. Med. Jour.*, Feb. 8, 1908) that the advantages of the raw milk, when properly used, far outweigh any advantages which highly heated milk may possess. If milk is heated it should never be raised above a temperature of 140° F. for twenty to thirty minutes, as the experiments of Russell and of Freeman show that this is sufficient to destroy the bacilli of tuberculosis, diphtheria and typhoid fever. Of the author's infants that were fed on sterilized or pasteurized milk continuously, or part of the time on

one and part of the time on the other, 97 per cent. developed scurvy or rickets or a combination of the two. These infants had been fed for a varying period of from three to eighteen months on the heated milk; pasteurized milk was given during nine months of the year and sterilized milk during the three summer months. This milk was all carefully modified to suit the age and digestion of each individual infant. About 20 per cent. of the infants had five feedings a day supplemented by breast feedings. These also had signs and symptoms of rickets, but in a degree less than those who were fed exclusively on pasteurized or sterilized milk. No infants fed on modified raw milk developed rickets or scurvy or any other disease due to improper feeding, such as anemia, malnutrition, marasmus, etc. In these cases of malnutrition raw milk was substituted with no other treatment, whereupon the children immediately began to improve. Infants which were in good health when fed raw milk, were attacked with symptoms of rickets when sterilized or pasteurized milk was given. An apparent exception to the results of the use of raw milk is the development of rickets in infants who have been fed for too prolonged a period on poor quality breast milk or poor quality and much diluted cow's milk, this having a deficiency of proteids and salts. In these cases immediate improvement and normal growth follows use of a milk of sufficient strength.

Therapeutic Use of Soured Milk.—The use of soured milk, says Haven Emerson (*N. Y. Med. Jour.*, Feb. 8, 1908), is based on three distinct properties: 1. The fact that pathogenic bacteria do not thrive in a medium that has a marked degree of lactic acid. 2. The process of carbohydrate and proteid disintegration occurring in the souring of milk makes a softer and more digestible and smaller casein curd, and a carbohydrate in a state of partial digestion. 3. Lactic acid activates peptic secretion and digestion. The use of soured milk is indicated broadly as a preventive against the putrefactive process of proteid disintegration in the digestive canal. The value of soured milk depends upon the purity of the original supply, the promptness and cleanliness of its subsequent handling, the constancy of the amount and quality of the dose of the "starter," or activating combination of yeast and bacteria, the limitation of the resultant fermentation at the proper point, and the subsequent care of the milk at a constant low temperature. Probably the inoculation with bacteria should be accompanied by inoculation with known cultures of yeast. The yeast is necessary: 1, To inhibit the overgrowth of pathogenic and putrefactive bacteria; 2, to add flavor which cannot be obtained without it, presumably by the production of aromatic substances such as esters; 3, to attack milk sugar after lactic acid has been formed in the milk, and produce alcohol and carbonic acid gas, which are valuable assistants in the digestion and absorption of milk and in making milk tolerated by irritable and congested mucous membranes.

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ORIGINAL COMMUNICATIONS.

THE CRIME OF GYNECOLOGY.

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IN the latter decade of the eighteenth century, one, John Bell, of Scotland, taught that, according to his belief, the ovary (ovarian tumor) might be removed and yet the patient live. Brilliant, successful, reputation-established John Bell never risked his position by attempting its performance. The seed sown in this conventional atmosphere fell upon good soil and was brought back to America's unconventional frontier by one, Ephriam McDowell. For fourteen years he labored and carried with him this latent idea. Diseases of women along with obstetrics had received some attention through the ages, but gynecology as a specialty was yet unborn. Women died of their numerous diseases or remained invalids, but the early nineteenth century progress was stirring men into action and McDowell was thinking. At last his opportunity. On a December morning in 1809, we find him preparing for a work that is to mean much to the world. He has no precedent, no hospital, no trained assistants, no anesthetic, only a courageous woman with an ovarian tumor—his opportunity and he is ready. He is weak on education, but he is strong on original thinking. He lacks the polish of the schools, but he has courage and directness. Truly this is a work for a Dr. Jekyll. How he needs all his powers. But there seems to be opposition. A crowd of men are gathering. Have they come to give him encouragement?

They carry a rope and are pointing to that nearby tree. They cry "Woman butcher!" "Woman butcher!" "Hang him!" "Hang him!" What a pity that this work should be undertaken at such a risk. How unfortunate at this time that Kentucky should think so much of her women and so little of human life. He is a good man; a successful physician; would it not be better to give up this dangerous undertaking? O, yes, if self-interested, it may be better for him, but what about the woman! What about generations of women yet unborn! What if, under the intimidation of the mob, he proves to be not the Dr. Jekyll we think him, but the shrinking, cringing, introspective Mr. Hyde. How long will science and the world wait for another man and another opportunity, if the threats of the mob cause his will to falter or his hand to grow unsteady? But we are dealing with a man of courage; he ignores them. Thus has our hero become immortal. Thus was gynecology born; charged with the crime of being a "woman butcher" and escaping the waiting rope and tree only by its success. McDowell lived to accomplish other deeds and point the way to abdominal surgery. Ovariectomy struggled long, and against bitter prejudice for a hearing, but it gained its ground, because it was not an abstract fight between its supporters and opponents. There was a woman in the case and she had to be taken into consideration. Those who wish to stay the wheels of progress for personal considerations, should now and then ask: What is for the best interest of the people in the case?

Since the days of John Bell and Ephriam McDowell, one after another of woman's diseases have been conquered. The genius of Marion Sims took hold of the work when it was unknown, and left it a well-defined specialty. The names of McDowell, Marion Sims, Emmet, Tait, Olshausen, Martin, Price, Shauta, Wertheim and Kelly are prominent among the long list of tremendous workers who have enriched this field. The specialty stands high among specialties for deeds accomplished, and, because of the great amount of work in this line, calls for workers for deeds yet to be accomplished. Gynecology is represented upon the faculty of every medical school. With obstetrics with which it is almost inseparably associated, it is recognized as an important section in the American Medical Association. It has one of the oldest and best known special societies in this country. In Chicago, it has a society well known for its scientific work. Gynecology is ready for the work in its specialty.

It has often been criticized for aggressive work, but seldom, if ever, for inactivity. Gynecology at the present time is not trying to solve the question of John Bell—may the ovary be removed and the patient live? It has grown; that question has been solved. The question now is how can the ovary be saved and the patient live and regain health? In other words, it is trying to work out the problems of conservatism when conservatism is to the best interest of the patient. Gynecology has earned its right to recognition.

In view of the work done, it comes as a surprise to many that some of our large charity hospitals do not honor this specialty nor honor themselves by the appointment of specially trained men. In a charity hospital the only honest excuse for excluding a well-known specialty is that there are no patients in that line of work. There are no gynecologists upon the staff of the Alexian Brother's Hospital and none are required; but what excuse can be given by the hospitals which make appeals to charity and distribute charity patients, if these patients go to others than those who have made a special study of the diseases in question? What excuse can we give if, in our large Cook County Hospital, the hundreds of gynecological cases, each year, are turned over to those who have made no special study of this work; are making no special study of this work; and never expect to make a special study of this work, when the intent of the civil service was that each line of work was to be put in the hands of those most competent to handle it? To the fair minded, it seems that it is only necessary to ask: Is there gynecological work to be done? Yes! Then those patients are being treated unfairly and the specialty is being treated unfairly. Then there must be opposition from some source. Who has the rope? What is the crime? We shall see.

In order that we put this matter in the right light, let us consider for a moment the moral ethics which should actuate us in medicine. The basic principle is that physicians are made for sick people and not sick people for physicians. "The Sabbath was made for man and not man for the Sabbath." Often and always we should ask what is right for the patient. The people then are to be considered. They are to be given the best possible service. This calls for cooperation instead of competition. The question is not how can I run Drs. Smith, Jones and Brown out of town, but how can Drs. Smith, Jones, Brown and I render these people the best possible service. If

we keep this in mind, we will not spend the time belittling each other. We will not try to do everything and do it poorly. We four, or ten or twenty in a town will fall into a natural way of bettering ourselves along one line of work. If Jones begins to adapt himself to surgery and Smith to internal medicine and Brown to gynecology and obstetrics, that makes my opportunity and I turn my attention to the eye, ear, nose and throat. This is far more rational than to have every man in town putting in an x-ray because Smith does; or doing a laparotomy because Jones had an appendectomy. That is the curse of hospitals in small towns. A place that would support one or two, good, qualified surgeons has its population decimated by twenty or twenty-five would-be-but-can't-take-time-to-prepare surgeons. Every physician trying to cover the same line of work is no more rational than for every merchant to carry the same line of goods. There are communities so isolated and small that all the work must be done by one man, and sometimes he does nobly, but, of necessity, he does many things poorly, and many a patient dies that skilled assistance would save. They pay the price of their isolation. Cooperation leads to greater efficiency.

As in a town, so in our county hospital. Here is a vast amount of work to be done. (1) Each patient is entitled to the best possible service. (2) He is obligated to render a service to science. Will these thousands of patients receive better service if the 69 attending physicians divide the patients equally among them and thereby keep the practice of medicine intact? This you will pronounce absurd, and it was so thought by those in authority. Will it be best to divide them into two divisions, medicine and surgery, and distribute them accordingly? It was not so considered and wisely. It was thought best to have them distributed according to the specialties represented in the schools with the exception of gynecology. Gynecology was to be left out. Was there no material in the line? The richest in the city. Was gynecology not worthy? This has not been charged. Did the best interests of the patient require this? No one can honestly claim this. Upon whom was saddled the burden of work that the gynecologist should do? The general surgeon. Was he willing? Indeed, yes. He had the rope. He it is, who says that gynecology shall not exist; that these hundreds of patients yearly shall be deprived of skilled services; that this abundance of material shall count for almost nothing for science. What is the explanation? In the

'80's of last century gynecology was done largely by the gynecologists, but toward the '90's the abdomen was opened more and more by the general surgeon. About the middle of the last decade the general surgeon began to look enviously over the pelvic brim. He has not asked, can he do the work better, but can he do it? One says it is absurd that a general surgeon, who can do a gall-bladder operation, cannot just as well take out an ovary. Perhaps he can, that depends upon the comparative attention he has given to each. That is only another way of saying that he does his gall-bladder work as poorly as he does his gynecology, but that does not need to discourage him entirely; he can do gall-bladder surgery better, if he gives enough time to the study of that work. Now and then a genius of versatility appears and almost breaks down the barrier of specialism. Then appears a genius for concentration, and a certain field of work is lifted higher than ever. But the fact remains that most of us can do a limited number of things well or a considerable number of things poorly. If the general surgeon wishes to take in ear surgery, eye surgery, nose and throat surgery, orthopedics, gynecology, etc., and to do these things superficially, he will pave the way for other specialties. There are many who want trained service. I predict that a specialty of abdominal surgery will be created, unless the general surgeon becomes less general. Surgery of the abdomen will be contested ground but at that time when a specialty demonstrates that she can do abdominal work better than a general surgeon she should have the work. The average man is not capable of doing creditable work in all branches. Diseases of women are not too well cared for, are not well enough cared for in the hands of those who give the best part of their time and thought to this work. A man may have had a hospital training, a wide experience in general work, may have made a special study of surgical technic, and given years of his time to the clinical and didactic study of gynecology; he may sift the literature, attend gynecological societies, hear and enter into discussions, develop advances in this line of work, believe in gynecology for the good it may be to women, and yet he feels that he is not half-fitted to cope with the complex problems of pelvic disease. Yet the general surgeon comes to these things intuitively. He has but to ignore gynecology, to avoid medical meetings where diseases of women are discussed, to discuss liver and stomach surgery and he is fitted to take the country's poor, have the gynecologist legislated out of the hospital

and run riot with his inexperience. I may be pardoned if this offends, but what words could express our contempt for the gynecologist who would use the power which he might possess to cause appendiceal, intestinal and gall-bladder surgery to be legislated out of the hands of the general surgeon because he, the gynecologist, could do it indifferently, knowing that the general surgeon could do it better.

Chicago is great in her resources, great in the number of her people, great in her geographical situation, destined to be a world power, the opportunity to be medical center of the western hemisphere is within her grasp. It is worth something to be a part of the forces which pluck the scepter of educational power from the old world and plant it in the new, that cause it to move from the East to rest a while or forever in this western metropolis. Great Chicago, how are you preparing for this work? By letting the spirit of "graft" pluck out one of the topmost rounds of the ladder of professional efficiency, which gynecology has placed by much hard labor, in order that the general surgeon may use it as a swagger stick to draw attention to himself. By presenting a picture to make the world laugh and pity. Chicago, a teaching center, at the meeting of the great American Medical Association will send her gynecologists to the section of Obstetrics and Diseases of Women where they will meet world-known men and where they will stand shoulder to shoulder with these men in trying to work out the problems of the diseases of the reproductive organs, and make these specialties more efficient. Then those same world-known visitors will attend clinics in our charity hospitals where they will find their gynecological friend kicked into the back yard and the gynecology being done by a general surgeon who has never considered it worth while to attend a single session of the obstetrical and gynecological section of any society and has, therefore, never mastered the problems of this branch, is not a teacher, is often a bungler at this work, is not surcharged with the importance of the work and, therefore, many scientific points go unnoticed. A man must be deeply impressed with the importance of a subject to turn its obstacles to advantage. Dr. Marion Sims at the time he was carrying out his repeated operations upon those three slave women, when weeks of hard thinking had surcharged his brain and put him in a receptive mood, hit his foot against a broom wire and an idea resulted that led to the use of silver wire and the cure of vesico-vaginal fistulæ

and incidentally the establishment of gynecology. In a recent issue of the medical journal we read that Dr. So-and-so, of ———, caught his foot in a coil of loose wire and, falling, broke his collar bone. The gynecologist is trying to make the specialty more efficient. The general surgeon is trying to belittle the work, minimize it, bring it down to his conception of it as a portion of general surgery, instead of bringing himself up to the specialty of gynecology; for this he could not do without giving such time to the work that his general surgery would suffer. If it is desirable that diseases of the pelvic organs be looked after in the most scientific manner, a specialty in this line should exist. If less accurate knowledge and less thought and consideration is best, if the work should be minimized and made inefficient for the good of the world, then a specialty should not exist. The work could well be turned over to any one who devotes his time to other considerations. We members of the medical profession, including the surgeons, should think what the treatment of the pelvic organs of women is to-day and what it would have been if every special worker in this line had given it only the attention of the general surgeon, what it may be in twenty, thirty, fifty, one hundred years from now if it draws its quota of special workers, and what it will have to be if no one gives more attention than that which comes to it from a life given to general surgery.

† Any field to progress must have special workers and when these special workers have brought about a well-known specialty like gynecology they should have the material in that line in our charity hospitals and the charity patients should have the services of these workers. This is right, it is just, it is to be expected. Gynecology going to the surgeon is not right, it is not square, it is not according to the rules of the game unless the rules of the game are still "graft." When possession passes from the hands of those who have earned it into the hands of those who can show no rightful ownership we usually call it a "steal." Can we give this a more euphonious title? Gynecology is not in possession of its own in our large charity hospital. What is its crime! On the eve of the one hundredth anniversary of McDowell's first ovariectomy, gynecology is again face to face with the savage in man which says we will take by might and not by right. In using his strength to obtain this work the surgeon has asked the question: What do I want? instead of, what is best for the people? In answering it he has said

in his actions, I am willing that the people should suffer. I am willing that less efficient service should be rendered. I am willing that some should die. I am willing that a useful specialty should pass that I may get the work. I am willing that this branch of medicine should be drawn down to a lower plane that it may correspond to my capacities as a general surgeon. I am willing that general surgery should stay her progress that I may take in all the surgery in the specialties. If it could be shown that the diseases of women are as well handled by the surgeon who gives little attention to them as by the gynecologist who gives much attention to them, science and the world would still be the loser, for although he gives little of his time to the work, it subtracts from his power to concentrate upon that work which he can at present do better than any other. This failure on his part to admit the necessity of specialization and his failure to consider surgery a distinct specialty opens the way for much amateur surgery.

"In ten years," the surgeon says, "gynecology will not exist." Gynecology is a science and art which treats of the diseases of women. Now what does he mean? Does he, in his farsightedness, prophesy that there will be no diseases of women at that time? That is far too good to be true. Does he, in his shortsightedness, mean there will be no art and science of dealing with these diseases? He is consciously or unconsciously favoring this. Does he mean that the word "gynecology" is so obnoxious that the term will cease to be used? That matters little, although it may be considered convenient. The probabilities are that diseases of women will be nearly as prevalent in ten years as they are at present. Some of these women will ignore their diseases or remain ignorant of them; some will suffer and complain and remain invalids; some will consult Lydia E. Pinkham; some will resort to Christian Science; some seek aid of the osteopath; many will be taken care of and operated upon by the general practitioner; many will be operated upon by the general surgeon, but in that day as well as this, many will think it worth their while to consult one who has made a study of diseases of women, whatever he happens to be called at that time. Which one, think you, will get the best service? But why wait ten years? If it was a matter between surgeon and gynecologist only, the surgeon would win to-morrow. The thing that stands in the way is woman and her diseases. The gynecologist's years of training hold the key to the situation. Trained service is wanted.

Reasons for Gynecology Being in the Hands of the General Surgeon in Our Charity Hospitals.—This must be charged entirely to the surgeon. Like many another he does not stop to inquire after the best interests of the people. He fancies that he is serving his own best interests and that is sufficient. In truth is he bettering himself? The number of surgeons is increased to the extent that new work is taken up. Each individual surgeon is doing more kinds of work but less of one kind; he is doing less of the work in which he is most interested in order that he may take in work that another specialty could do better and in which he is little interested. To illustrate, let us suppose that in a given town there are six general surgeons and three gynecologists. If the lines of specialism are broken down and each of the nine do all kinds of work, are they benefited? No, they are harmed and the people get decidedly poorer service.

At present there are twenty-one surgeons doing surgery, including the surgical diseases of the pelvis, at Cook County Hospital. Some of these are men who are being diverted from a life chosen work in gynecology. One-third to one-fourth of this surgical work done by these men is gynecology. If one-third of the work is gynecology, what have these women done that they are not entitled to the work of seven gynecologists? They certainly would be immensely benefited. To do the remaining two-thirds of the surgical work there would be fourteen surgeons. How comes it that these people are not entitled to the services of men who are trying to better themselves along these lines? The people would profit thereby and the surgeon would receive a correspondingly greater number of cases of one kind.

The surgeon's excuses for diverting this work from the specialty which has trained for the work are:

- I. "Gynecology is surgery." Some gynecology is surgery, and some of it is not. There is an important and too little recognized nonsurgical side of gynecology. Sometimes the gynecologist has unwisely lost sight of this, but it has been particularly minimized by the general surgeon whose economic interest is served by the disappearance of the nonsurgical features of gynecology. To assume that a woman has a surgical difficulty or none at all is a gross injustice to womankind. Some gynecology is surgery and is up to the standard of surgery. Some surgery is gynecology, but it is not usually up to the standard of gynecology. This is not always the fault of the general surgeon, but is an evidence of a man's limitations.

Dentistry, orthopedics, otology, ophthalmology, rhinology, laryngology are to a large extent surgical. The barber and the surgeon were one in olden times, but the handling of the barber's instruments became so high an art that the surgeon has been compelled to give up literally shaving people except when they are under an anesthetic. The doctor was once the dentist, but dentistry has advanced and a man has now to devote his life to that work. The surgeon is limited in this line to the pulling of a few carious teeth between a couple of laparotomies. If ear work, eye work, orthopedics, genitourinary surgery, gynecology degenerate, the general surgeon can encompass them to the exclusion of the specialist in these lines; if he does encompass them, they will degenerate. He cannot keep pace with all this work, if it goes forward as it should, and we are not in an age of wilful stagnation or degeneration. A man to be skilled must give up some things that are surgical. Then, too, we must not forget that the greatest part of gynecology is diagnosis, and prognosis is important. The gynecologist trains his hand and brain for pelvic diagnosis by years of work in the gynecological dispensary. Here the finger is trained to note variations and the brain is trained to interpret these variations. An effort is made to arrive at a diagnosis, operative or nonoperative treatment is decided upon. The question of immediate or future operation should be settled to the best interest of the patient. To break down the barriers of specialism in our charity work leads more and more to that method of diagnosis which "cuts in and finds out," or which "waits for something to turn up." This cannot be otherwise. Ineffectual treatment is fostered. Gynecology is so easy for the surgeon theoretically and yet so difficult to perform. To have women well taken care of, one must have a thorough grounding in special anatomy, physiology, embryology and pathology; the normal must be distinguished from the abnormal.

The anatomical landmarks in health and disease must be readily and quickly distinguished. Numerous operations must be performed upon one patient, therefore delay is dangerous. The highest training is necessary to avoid operating upon women at times when it is unnecessary, to choose the right time and the right operation and perform it skilfully, to avoid removing organs when they should be left and to avoid leaving them when they should be removed. Women are operated upon when only pregnancy exists, and important action is delayed

thinking a tumor is a pregnancy. Extrauterine pregnancy is frequently treated as abortion, and sometimes as endometritis. Curettage and trachelorrhaphy has been performed in a case of extra-uterine pregnancy. The abdomen has been opened for fibroids and ovarian cysts, and pregnancy found. The abdomen has been opened for a tumor, and when opened, the diagnosis changed to pregnancy and the abdomen closed, then later the abdomen has been reopened for the removal of a fibroid. The bladder has been opened while doing pelvic work. The ureters have been injured. Vento-fixations have been done where round ligament work would have done better. Alexander's operation is done where there are complications. Cancer of the uterus offers one of the most difficult problems in medicine. These are a few of the things which emphasize the complexity of the problems of pelvic disease. It is not contended that the gynecologist never makes these mistakes, or never renders ineffectual treatment, but, when he does, it only proves that greater skill and greater training and greater specialization are required rather than less.

2. "We can do this work." The needy hunter with gun and dog goes forth in early morning to procure family food. He follows the trail earnestly, warily, over hill and dale, through forest and swamp into mountain fastness and across the plain, and, at last, with the last rays of the day's light, succeeds in bringing down his quarry. He swings the carcass to a sapling and hurries homeward in the night. Returning the next morning, he finds his property being removed by a wealthy land owner, whom he accosts with the remark that he has earned a right of ownership. He is stubbornly dismissed by the land owner's remark that he and his family can eat venison. This illustrates the unfairness of the surgeon's proposition, but it is incomplete because the land holder could undoubtedly eat the venison as well as could the hunter. A carpenter might make a mahogany table, a blacksmith might make a watch, a sign painter might paint a picture, a cart-horse might run a race, but there are some who might wish a different kind of a table, watch, picture, or race. Granted that he can do it to his entire satisfaction, and we must admit that in this he is not hard to please; what matters that when there are those trained to do it better. The best is none too good.

3. "The specialist has looked so long at one thing that he sees nothing else." The specialist may have concentrated

upon his work too much to be a champion golf player, or a social lion, or a connoisseur of fancy wines, but when it comes to a matter of a pelvic disease, the patient and the world are not the losers by the concentration of the gynecologist.

4. "There are no gynecologists at present." There are men who teach the work, who have devoted years of special study to this line, who are found when any discussion in this line was expected to take place, who are sifting the literature for any advancement. Men who would be glad to take a civil service examination in this line to see whether or not they were better qualified to do the work at Cook County Hospital. If the surgeon means that there are no gynecologists because much of this work is done by others, and because every so-called gynecologist does some other work at times, then by the same token there are no surgeons. More and more surgery is done by the general practitioner. More and more the surgeon does other things than surgery.

5. "To give up gynecology would be giving up so much. We have already lost a great amount of work to the orthopedist." This demonstrates that the absence of gynecologists on the staff does not indicate absence of people to be served or absence of material for scientific study. One-third to one-fourth of the surgical material is gynecological and the gynecologist is snubbed and the patients' rights ignored because "we," the surgeons, would lose so much. What right has the surgeon, or internist, or the specialist to hold for his specialty any line of cases? Merely the right that comes from his ability to do the work better than any other specialty can do it. Gynecology or surgery should not hold one case to which the other specialty could render more skilled service.

6. "But each surgeon would get so few cases." Twenty-one surgeons on a hospital staff. No gynecologist! Gynecology must be thrown out and the people made to suffer, that twenty-one surgeons may have operations enough to be worth their while for nine months per year. It is a matter for the surgeon to take the cases which rightfully belong to him and adjust the number of surgeons and the time of service to fit the amount of work to be done, but we might suggest that the number be cut down or the term of service be shortened. By their own argument, if they are willing to commit one gross injustice to satisfy their desire for cases, they might another. Safety may demand that the number be lessened.

The above are his excuses. There is not one single point of merit in all his arguments. In a few words his arguments mean that he wants gynecology and he is going to have it, if his position is strong enough to allow him to hold it; that he does not wish to concentrate upon gynecology nor upon those things which the surgeon can at present do best, nor does he wish another to specialize upon this work, regardless of the harm that may be done patients, the poorer training that is given internes, the less skilled training it gives the attending staff, the poorer reputation that comes to the hospital, the loss that it is to science.

Cook County Hospital should be the clinical center of the West. Material is there for the richest clinics in all branches. Every specialty should be represented. Visitors to the city should find this a Mecca for discovering the newest and best and rarest thing in every branch of medicine. A gynecological clinic should here be held, which in time should approach or rival in value the clinics of Tait and Kelly and the numerous, widely known clinics of Continental Europe.

The welfare of patients demands that a clinic be allowed in this branch. Progress in this line is impaired and dangerously threatened. The political value that comes from members of the board being able to say that "no operations are allowed upon women in the nude" does not atone for the loss that comes to patients and to science by these pernicious restrictions. Shades of Mahomet! when will the time come that a scientific clinic will not be looked upon as an indecent exposure. If the layman's mind cannot look upon the correction of pelvic disease except as a nasty sex problem, then he should be willing to leave these matters with the profession. It is not fair to woman and her diseases to discriminate against her in the matter of teaching clinics.

Circumstances could hardly combine to give gynecological cases poorer service in our county hospital. 1. Gynecologists as such are excluded, throwing the work largely on untrained hands. 2. A surgeon may hold a gynecological clinic through the abdominal route, but not through the vaginal route. 3. Instruments are not allowed in the clinical operating room for vaginal work, should an emergency call for them. This discourages thorough diagnosis, prevents vaginal examinations, limits the choice of route, prohibits a vaginal operation even in necessity, perverts the judgment of the operator, inculcates

false ideas in the minds of students, and leads to abdominal operating when both abdominal and pelvic should be done. These are the inevitable results of such a practice.

Gynecology and obstetrics are closely and inseparably connected. Obstetrics must advance by knowing more of surgery. Gynecology has taught obstetrics many things and led her out of conservatism and good or poor obstetrics have an important bearing upon gynecology. The two subjects run together; are studied together in the section of the American Medical Association and in special societies. They cannot well be entirely separated. In Germany the gynecologist and obstetrician is one. There normal obstetrics is less in the hands of the physician. In Cook County Hospital normal obstetrics is done entirely by the interne. Surgical obstetrics is the nearest approach to gynecology that we have. No rational dividing line exists. No admission examination can distinguish between the cases which should go to surgical obstetrics and to "surgery" as it here includes gynecology. No mistakes are corrected by transfer of patients, and this puts a premium upon inaccurate diagnosis and perversion of judgment. Cases with the same pathological condition may be sent to either merely by a juggling of terms. There is no anatomical, physiological, pathological or bacteriological reason for the division that is made.

To combine what is known as surgical obstetrics and gynecology would give an anatomical, physiological and pathological basis for the distribution of cases. One service would be looking after the diseases of the reproductive organs, and it is seldom that these would be confused with diseases of other organs. More men could be added to the service to correspond to the additional work. Some of those now upon the surgical staff would here be given a chance to follow a chosen life work. Here would be a service worth a man's while to follow and build up. Here would be a service which would attract an interne especially adapted to this work to remain over one or two years to do special work and supervise the work of the younger internes, and do some original work. This would be an arrangement that would be greatly to the benefit of the patients in this line of work; would add greatly to the advancement of the science of medicine; and no man would be injured but rather benefited thereby.

In the body of this paper and in my conclusions, I have merely drawn back the curtain in order that the facts may stand

forth "in the nude." I have not endeavored to retouch the picture. If these facts offend in their nakedness, it is time that steps were taken to change the facts.

My conclusions are:

1. Charity patients in our hospitals are largely deprived of the privilege of choosing their physician.

2. It is, therefore, the duty of the hospital to so arrange the service that the patients shall be taken care of by men trained in the line of these diseases.

3. One-third to one-fourth of the surgical beds in our charity hospitals are filled by gynecological cases.

4. Many gynecological diseases are not surgical.

5. There is a well-known specialty whose workers are by adaptability and training prepared to give these cases skilled service. They have worked out some of the problems of pelvic disease and are earnestly endeavoring to work out others.

6. General surgery is working out other problems, and is working gynecology as a side line for profit without the science of it.

7. The best interests of the present and future gynecological patients demand that gynecology be recognized, for in that way only can the diseases of women be looked after intelligently and efficiently.

8. The science and art of gynecology can become common property of the profession only through specialism; specialism is a distributor of knowledge.

9. The science and art of this branch of medicine cannot go forward without clinical teaching by those versed in the literature and practical knowledge of this branch.

10. It is due the science of medicine, the world at large, and future patients that Cook County Hospital with its abundant material should furnish one of the richest gynecological clinics in the world.

11. That ruling which permits abdomino-pelvic and prohibits vagino-pelvic operations limits the choice of a desirable route, perverts the judgment and leads to incomplete work, as a large percentage of gynecological cases need both vaginal and abdominal work.

13. The above circumstances combine to give patients and the science of medicine the most inefficient service in the line of diseases of women.

14. The crime of the gynecologist is not that gynecology

has not labored and made discoveries; not that it has not included good men in its ranks; not that gynecology has not progressed; not that there is no more work to be done; not that any other specialty could do it better; not that the world would be richer without it, but that it stands in the way of the surgeon's economic interest.

It was not too little, it was too big. It is not that women have too few troubles to demand specially trained men, but they have too many to be surrendered by the surgeon. Gynecology built up so large a work that it tempted an avaricious neighbor.

15. The crime of general surgery is that it is tempted to encroach upon the several specialties, and the price is great enough to make her forget that she is herself a specialty and entitled to just that work that she can do better than any other specialty can do it.

16. By this the world suffers and the general surgeon does not gain for there will be a correspondingly greater number of surgeons, but each doing less skilled work.

17. In this, our large charity hospitals are exhibiting that kind of charity that begins at home and gets no further.

18. If this was a question in which the general surgeon had equal merit with the gynecologist, the general surgeon would win, for he has the numbers in his favor. He again has the rope. But again there are the women in the case and the gynecologist has the training. We care not what happens to gynecology or general surgery, so it is an honest answer to the question—"What ultimately is for the good of the people who are to be served?"

19. Lastly, this paper must not be interpreted as a criticism of surgeons as surgeons, nor a criticism of the surgical staff of our county hospital as surgeons. Upon surgeons as monopolists of surgical specialties in our charity hospitals working to the detriment of patients and science I have concentrated my remarks. We have in all probability the best surgical staff in the history of the hospital, and it is no criticism upon them to say that they are not dentists or that they are not gynecologists. We have no gynecologists on the staff as such, and this line of work will never be well done until this is changed. Conditions are bettering in our county institutions. There are many evils that it will take time and funds to correct. Here is a problem that could be corrected just by honestly asking and answering

the question—What will best serve the people? These opinions may find objections in the minds of some, but eventually they will win, because they are based upon right principles—the principles of efficient service.

100 STATE STREET.

PRESERVATION OF THE OVARIES ENTIRE OR IN PART IN SUPRAVAGINAL OR PANHYSTERECTOMY.*

BY

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THE investigations upon which this paper is based were undertaken to determine if the preservation of more or less ovarian tissue after the removal of the uterus tended in any way to mitigate the discomforts arising from the artificially induced menopause. With this end in view reports were secured from some 250 patients upon whom hysterectomy had been performed during the past six and a half years in the University of Michigan gynecologic clinic and my private hospital. Since a certain time must elapse after the operation before the development of menopause symptoms, no reports were sought from patients operated later than July 1, 1907. The questions submitted were purposely made as simple as possible and so formed that they could be answered in the affirmative or negative, thereby in a great measure avoiding ambiguity and subsequent error in the tabulated results. The range of questions covered the principal symptoms common to both the natural and artificial menopause, such as "hot flashes" or "flushings," "sweating" and general nervous symptoms, including insomnia. Space was left in the circular for qualifying remarks and the latter were given due weight in tabulating each case.

While the investigation of any question by interrogation of the patients can never perhaps be as accurate as final reports based upon anatomical findings, it must necessarily be employed in all questions involving subjective symptoms. Where such inquiries are pursued carefully and without bias there is no reason for thinking that the results may not be fairly accurate.

* Read by invitation before the New York Obstetrical Society, March 12, 1908.

In a recent article on the immediate and remote results of 430 cases of uterine fibroids operated upon at Döderlein's clinic, Sarwey calls attention to some of the dangers incident to investigations such as we have made. He emphasizes the fact that suggestion on the part of the questioner may result in the patient greatly exaggerating her symptoms, and that, therefore, great care must be exercised if such sources of error are to be avoided. He even thinks it necessary to consider the troubles of the artificial menopause under two heads, according as the symptoms are voluntarily complained of or only elicited after questioning. Such a system of collecting data is only applicable when one can personally examine his postoperative cases and is obviously impossible in the majority of clinics in this country. Moreover, such a system seems unnecessarily complicated, if care be used in the questions employed.

For the purposes of our investigation only such patients could be included who were regularly menstruating up to the time of operation, otherwise any postoperative symptoms complained of might have been the result of the natural and not the artificial menopause. Here again each case was carefully scrutinized and excluded if the bloody discharge prior to operation seemed dependent upon pathological and not natural causes. This reduced the number of cases available for statistical purposes to 173, in 146 of whom both ovaries, together with the uterus, were removed. In the remaining 27 cases, a part of one ovary, one ovary or both ovaries were retained.

By tabulating the reports received from the 173 patients an attempt has been made to determine:

1. *Frequency.*

Do more patients after hysterectomy with removal of the ovaries suffer from the troubles of the menopause than those who have undergone similar operations but where more or less ovarian tissue has been retained?

2. *Severity.*

In which of the above two classes of cases are the symptoms most severe?

3. *Age.*

In the two classes of cases under consideration does the age of the patient at the time of the operation have any influence upon the frequency and severity of the symptoms of the menopause?

4. *Kind of Operation.*

In what degree is the frequency and severity of the symptoms of the artificial menopause influenced by the variety of hysterectomy employed (supravaginal or panhysterectomy)?

5. *Disease.*

Does the disease for which the hysterectomy is performed influence the relative frequency and severity of the symptoms of the menopause in the two classes of cases?

6. *Duration of Symptoms.*

When ovarian tissue is retained after hysterectomy, is the duration of the troublesome symptoms of the menopause shortened as compared with cases where both ovaries have been removed?

7. *Amount of Ovarian Tissue Retained.*

Does the amount of retained ovarian tissue influence in any way the frequency and severity of the symptoms of the artificial menopause?

1. *Frequency.*

As will be seen by consulting Table I, the symptoms of the menopause were completely absent in fifteen out of the 146 cases (10 per cent.) of hysterectomy with removal of the ovaries. On the other hand, out of the 27 cases in which ovarian tissue was retained, seven, or 26 per cent., were entirely free from any of the troubles of the menopause. It must be understood that according to the reports there was entire absence of symptoms in these cases. No cases are included where any of the various nervous symptoms of the menopause were recorded as occurring after the operation. In quite a considerable number of instances the patient reported that she had had a few slight hot flashes or other nervous symptoms. As far as the patients were concerned it would have been perfectly fair to include these cases among those who were free from the symptoms of the menopause, for from the reports it was evident that they caused only the slightest inconvenience. It was thought best, however, to place these cases among those where the symptoms were present, comparing them later on with those where the symptoms were more severe. If the objection be raised that it is easier for the patients to affirm that they have symptoms than that they are absent, still the figures are of value from a comparative standpoint, for the same method was employed in securing replies from the two classes of patients.

The figures do not confirm my impressions regarding the

presence of troublesome symptoms following hysterectomy after leaving in more or less ovarian tissue. Certain it is that the patient who complains is apt to make more of an impression upon us than one of whom we never hear after the operation. For that reason careful after-histories of our cases are always of value. Until I had tabulated the reports received from my patients, I was unable to see much difference in the after-results, as far as the symptoms of the menopause were concerned, when the appendages were removed and when they were retained.

Comparing the above figures with those obtained by others we are not surprised, for the reason stated, to find marked variation in the results, which again proves that the greatest value of investigations such as these, after all, consists in comparative sets of figures.

Thomas, who tabulated 100 cases of supravaginal hysterectomy for fibroids, found that out of 36 cases where the ovaries were removed every patient but one suffered from the artificial menopause, whereas when the ovaries were retained in 59 cases, 66 per cent. experienced no such symptoms. This last percentage of freedom from the symptoms of the menopause corresponds with the figures of Glævecke, who in a much smaller number of cases, twelve, found that eight, or 66 per cent., experienced no symptoms.

Burckhard's figures more nearly correspond to my own. In forty-seven cases of hysterectomy with removal of the appendages, there were seven, or 15 per cent., who suffered no inconvenience from the menopause. In ten cases where the ovaries were retained, seven, or 70 per cent., were free from symptoms. Doran found five cases without symptoms of the menopause out of twenty cases of hysterectomy with removal of the ovaries, or 25 per cent. In seven cases where the ovaries were retained, six, or 86 per cent., were free from symptoms. Kelly had nine cases out of twenty, 45 per cent., free from the symptoms of the menopause after hysterectomy with retention of the ovaries. Sarwey, in 211 cases of removal of the uterus together with the appendages, found the symptoms of the menopause absent in 70 per cent., while in sixty-four cases where the ovaries were retained, there was an absence of symptoms in 72 per cent. These last figures are surprising and contrary to any I have met with anywhere. The kind of operative material from which the statistics are drawn can only partially explain the high percentage of patients who do not suffer after the re-

removal of the appendages. These statistics also differ from the others, in that the percentage of patients who are free from menopause symptoms after retention of the ovaries, is only 2 per cent. higher than when the appendages were removed.

Summarizing the statistics including my own we find 460 cases of hysterectomy with removal of the appendages with no symptoms of the menopause in 174 cases, or 37.8 per cent. There are also 209 cases of hysterectomy where the ovaries were retained with no troubles of the menopause in 126, or 58.5 per cent., giving an advantage of 20 per cent., as far as freedom from troublesome symptoms are concerned, where some ovarian tissue is retained.

For obvious reasons I have chosen only statistics from series of hysterectomies where the operative methods were similar to those employed by me. This means a certain number of complete removals of the uterus and supravaginal hysterectomies where the amputation is performed at the level of or below the internal os. The amputation in most instances was made intentionally at or below the internal os in order not to leave any uterine mucosa and as little as possible of the cervical mucosa. This was to do away with purulent discharge, so frequent after hysterectomy especially where the operation was performed for suppurative disease of the appendages. In contradistinction to this method of amputation is the one advocated by Abel and Zweifel and supported by Werth. Beyea, of Philadelphia, was the first in this country to advocate the operation and reported a case treated according to this method. The underlying idea of this operation is the amputation of the uterus as far above the internal os as the individual case will permit, so as to retain as much as possible of the uterine mucosa. By this means, where some ovarian tissue has been preserved, it is claimed that menstruation will continue after the operation in a certain proportion of the cases and that even where this function is not retained the symptoms of the menopause are markedly less. Frankenstein in a recent article gives a résumé of the work at Werth's clinic. He advocates not only high amputation of the uterus in hysterectomy and retention of the uterine mucous membrane, but insists if the best results are to be obtained, the blood supply of the ovaries must be interfered with as little as possible. With this end in view the fibromyomata are enucleated and the uterus made small enough to tie the arteries well toward the uterine insertion of the tube or even in the sub-

stance of the uterus. In the same way the utero-ovarian anastomoses should be preserved as far as possible, branches of the uterine arteries being tied as high up as possible. Frankenstein reports two groups of cases operated according to this method. In the first group of fifteen cases menstruation was retained for various periods and there were symptoms of the menopause in four cases, or 26.7 per cent. In other words about 73 per cent. of the patients after this kind of operation were free from the menopause symptoms. In the second group were thirteen cases where menstruation did not appear after the operation, yet the results were even better, as in about 85 per cent. there appeared no menopause symptoms. In two other groups of cases where amputation of the uterus was made lower down but with retention of the ovaries, symptoms of the menopause appeared much more frequently, showing an advantage, as far as symptoms were concerned, of about 20 per cent. in favor of the cases where the high amputation was made. The average percentage of freedom from symptoms in the first two groups where high amputation was performed was 84.6, higher by 26.1 per cent. than in the cases summarized above where either the amputation was made low down or a total hysterectomy was performed.

Whether in seeking freedom from the troubles of the menopause by a high amputation of the uterus, we subject the woman to other equally severe and dangerous conditions, such as continuance of purulent discharge, subsequent painful menstruation, degenerative or malignant changes in the retained portion of the uterus and appendages, is an entirely different question. Again we must take into consideration the subsequent health of the patient irrespective of the symptoms of the artificial menopause symptoms. Will the retention of such a large uterine stump and both ovaries give us more or fewer well women after the operations than after the low supravaginal operation? Here again we can arrive at a decision only after a careful study of the after-histories of our patients.

2. *Severity.*

Is the severity of the symptoms of the artificial menopause after hysterectomy greater when the ovaries are removed than when some ovarian tissue is preserved? In estimating the severity of the symptoms of the menopause in the 173 patients from whom reports were received, due weight was given each reply.

The cases were then summed up and assigned to four classes, "absent," "slight," "moderate," or "severe" in accordance with the absence or severity of the symptoms. A patient was assigned to the slight class if she had only a very few hot flashes and suffered from them less than a year. If more frequent and if they lasted two years they were considered moderate. If the symptoms were more numerous and extended beyond two years or if the patient emphasized her sufferings they were considered severe. While such a classification is necessarily arbitrary it is valuable from a comparative standpoint, since the same standard was employed in judging all the cases. In Table II the severity of the symptoms is considered, regardless of age or disease. The percentages where the patients remain free from the symptoms, naturally remain the same as in the other table, namely, 10 per cent. where the ovaries were removed and 26 per cent. where they were retained. Apparently the influence of the retained ovaries is felt in the other patients, for in the 146 where the ovaries were removed only 18.5 per cent. could be classified as slight. This as compared with 33.3 per cent. where the ovaries were retained. Those having symptoms marked "severe" also show a marked difference in the two columns. Where the ovaries were removed, 34.2 per cent. of the 146 cases had severe symptoms following the operation, while this was true only to the extent of 18.4 per cent. in the cases where the ovaries were retained. In the main this corresponds with Thomas' findings, only the difference in the two classes of cases is much more marked in his tables, for there were no symptoms of the menopause in 66 per cent. of the cases where the ovaries were retained and only 3.3 per cent. of severe symptoms as compared with 22.8 per cent. where the ovaries were removed. From these findings Thomas concludes that "in certain patients the ovaries continue to perform their functions in the same manner as formerly but in a less degree." It seems to me that no exception can be taken to this conclusion. Glaevecke's conclusions that the ovary continues to functionate after the removal of the uterus were opposed by Abel on anatomical grounds, since he found upon examination that the ovaries atrophied after removal of the uterus. In the light of subsequent investigations I think we are justified in concluding that the ovary after removal of the uterus will continue to functionate if its blood supply has not been too greatly interfered with or if the organ has not been injured during the operation. Still this cannot be

said to be proved as yet. It is simply a theory which seems to be supported by a certain number of facts.

3. *Age.*

In the two classes of cases under consideration does the age of the patient at the time of the operation have any influence upon the frequency and severity of the symptoms of the menopause? It has generally been supposed that the younger the patients operated upon, the greater would be the number who would suffer from the troubles of the menopause. This is not borne out by my figures, certainly not in the cases where the ovaries have been removed. In Table III the cases have been arranged according to age. It will be seen that the troubles of the menopause were present in the same percentage of cases in the patients operated upon between the ages of 20-29 and the ages 30-39, while the percentage of such patients is increased in the forty-five cases operated upon between the ages 40 and 44. In the first period, 20-29, the percentage is 86.4 while 93.4 per cent. of the forty-five cases reported themselves as suffering to some extent from menopause troubles. There are only two age periods which can be considered in the cases where the ovaries were retained, sixteen cases between the ages 30-39 and seven cases between the ages 40-44, since there are too few cases at the other age periods. We find a larger percentage of women, 81.3, between 30-39 who complain of symptoms after the operation, although the proportion is still high in the age period between 40 and 44 (57.4 per cent.)

It must be remembered that all of the 173 women were still menstruating regularly at the time they were operated upon. Some of them must have been near the beginning of the menopause, yet as far as their periods were concerned there were no evidences of it at the time of the operation. It would seem as if the retention of the ovaries had had a marked effect in mitigating the symptoms, especially in women between the ages of forty and forty-four. The number of cases where the ovaries were retained is rather small for any extensive deduction, but it would seem fair to conclude from a study of this table, that the greatest number of women suffer from the symptoms of the artificial menopause when the uterus and ovaries are removed between the ages of and forty and forty-four. Hence the rule that after the age of forty the ovaries should be sacrificed with the uterus should not be followed if the best interests of

the women, as far as symptoms of the menopause are concerned, are to be taken into consideration. Olshausen takes issue with Krönig on this point and never removes the ovaries from a woman under fifty unless obliged to, if she still be regularly menstruating. Nor is it true, according to my statistics, that the younger the woman the more she suffers from the symptoms of the menopause after the removal of the uterus with its appendages. This observation is of some value, for we often go to some length in our attempt to conserve an ovary in a young person where the organ would be sacrificed in a woman over forty. The above conclusions might save us from the error of conserving an organ of doubtful integrity, if present in a young person, under the mistaken impression that such action was demanded on account of the age of the patient.

4. *Kind of Operation.*

In what degree is the frequency and severity of the artificial menopause influenced by the variety of hysterectomy employed (supravaginal or panhysterectomy)? Doran, an advocate of the Zweifel-Abel high amputation operation, remarks in his second article that it is for the advocate of panhysterectomy to show whether that operation be not followed by relatively worse menopause symptoms even when the ovaries be retained. While not an advocate of this form of hysterectomy, since I consider the supravaginal much the easier and simpler operation, it has been employed for various indications in forty-six of the 173 cases. These, together with the supravaginal operations (127), have been tabulated for purposes of comparison in Tables V and VI. A study of Table V shows the frequency of the menopause symptoms after the two varieties to be almost identical. Thus as far as these figure show anything, those operators who advocate complete hysterectomy have nothing to apologize for as far as the production of symptoms of the menopause is concerned. If our conclusions, enumerated above, regarding the effect of the operation upon the blood supply of the ovary are correct, we would expect to have the same symptoms follow both operations. For in low amputation of the uterus, the uterine arteries are ligated practically in the same manner as in panhysterectomy.

The same conclusions are arrived at as to the severity of the artificial menopause after the two operations. For the sake of clearness the patients having "slight" symptoms have been included among those with "moderate" symptoms. A study

of Table VI shows that, as far as the two operations are concerned, the severity of the symptoms of the menopause are not influenced one way or the other.

5. *Disease.*

Does the disease for which the hysterectomy is performed influence the relative frequency and severity of the menopause in the two classes of cases? The following cases have been tabulated in relation to the effect of disease upon the menopause:

Fibroids,	80.
Inflammatory disease,	62.
Ovarian disease,	25.

If Doran's statement be true, that it is useless to study the effects of the removal of the appendages for suppurative disease in young women because it is never clear that all ovarian tissue has been removed, then we would expect a marked difference in the symptoms of the menopause after removal of the uterus in fibroid and inflammatory disease. A study of Tables VII and VIII, however, shows this not to be the case, for the percentages are about equal. The same is true of the frequency of the menopause after hysterectomy following removal of new growths of the ovaries as shown in Table IX. It would seem as if this tends to show that in the modern operation of abdominal hysterectomy for inflammatory disease, where the adherent appendages are enucleated by sight as well as touch, very little ovarian tissue is left behind. Otherwise the percentages in the two classes of cases would show marked differences, which is not the case.

In Tables X, XI, and XII an attempt has been made to ascertain if the severity of the menopause symptoms is influenced by the disease for which the operations were performed. Because of the small number of cases, only those where the ovaries were removed will prove of any value. The severity of the symptoms were practically the same after hysterectomies for fibroids and inflammatory disease, but the severe menopause symptoms are much less marked where the appendages were removed for ovarian new growths. Is it not possible that in some of these latter cases, the ovarian tissue had largely been done away with and the individual, prior to the operation, had become more or less accustomed to a decreased activity of the ovary? Hence, after the hysterectomy and bilateral removal of the new growths, the individual was not suddenly deprived of what had sufficed up to that time to maintain menstruation. Whatever the explanation,

the fact remains that after hysterectomy and bilateral removal of the ovaries for new growths, the symptoms of the menopause were much milder than after the hysterectomies for the other two diseases.

6. *Duration of Symptoms.*

When ovarian tissue is retained after hysterectomy, is the duration of the troublesome symptoms of the menopause shortened, as compared with cases where both ovaries have been removed?

There will necessarily be some inaccuracies here for it is difficult to say how long a woman who reports her symptoms as still persisting after the hysterectomy, will continue to manifest those symptoms. Still, Table XIII will approximately give us the truth, for no case operated upon subsequent to February, 1907, has been included in this list. There were 115 cases in all, ninety-seven where the ovaries were removed and eighteen where they were retained. The most striking feature of this table is the preponderance of cases where the symptoms of the menopause extended over only a half year where the ovaries were retained, 44.4 per cent., as compared with 5.1 per cent. where the ovaries were removed. This is one of the most convincing arguments to my mind that leaving in of ovarian tissue does mitigate the symptoms of the menopause. In four cases, or 22.2 per cent., however, the symptoms persisted four years, so that it is impossible to predict what effect the retention of the ovaries will have on any individual case.

7. *Amount of Ovarian Tissue Retained.*

Does the amount of the ovarian tissue retained in any way influence the severity of the artificial menopause?

This has been worked out in Table XIV. It shows that when a part of one ovary has been conserved the symptoms were moderate in two cases (66.6 per cent.) and severe in one case (33.3 per cent.). Where the whole of one ovary was preserved, 30 per cent. of the cases had no symptoms at all, while thirty-five had slight symptoms. In other words, while the cases are perhaps rather few in number for accurate deductions, it is perfectly fair to conclude from a study of this table that the greater the amount of ovarian tissue retained, the greater influence such retention will have upon the symptoms of the menopause. Furthermore, if this be true, it would be best to conserve both ovaries, if any at all.

CONCLUSIONS.

1. At least 10 per cent. of all women regularly menstruating at the time of operation will be free from the troublesome symptoms of the artificial menopause after hysterectomy with removal of the ovaries.

2. The percentage of women with no symptoms after similar operations will be slightly more than doubled if some ovarian tissue be retained.

3. The severity of the symptoms of the artificial menopause is much less when the ovaries are retained after hysterectomy.

4. It is not necessarily true that the younger the woman, the more will she suffer from the symptoms of the menopause after hysterectomy with removal of the ovaries. The greatest percentage of suffering occurs in women operated upon between the ages of forty and forty-four.

5. Therefore, the rule that ovaries should be removed from patients over forty when hysterectomy is performed should not be followed.

6. The frequency and severity of the artificial menopause is not influenced in any way by the kind of hysterectomy performed, whether the ovaries be removed or retained.

7. The severity of the symptoms of the menopause is practically the same after hysterectomies with removal of the ovaries for fibroid disease of the uterus and inflammatory disease of the appendages.

8. Retention of ovarian tissue after hysterectomy cuts short the period from which patients usually suffer from the symptoms of the artificial menopause.

9. The greater the amount of ovarian tissue conserved, the more will the symptoms of the artificial menopause be mitigated.

In what has preceded it will be noticed that I have purposely avoided using the term "ovarian secretion." It was not the purpose of this paper to pass in review the many excellent hypotheses which have been advanced to explain woman's general dependence upon the activity of the ovaries. Neither has it been my intention to discuss the much discussed and ever interesting subject of conservative surgery. I have selected for your consideration one small part of an exceedingly broad question. The experimental and theoretical sides of the problem are just as interesting, perhaps even more so, than is the clinical side. But when one tries to cover too much ground in one paper, the result, as you know, is apt to be unsatisfactory.

However, I may say that in the preparation of this article, I found it necessary to read the most important contributions on the subjects of ovarian secretion, ovarian grafting and organotherapy. One has only to glance over the references in such excellent monographs as Bestion de Camboulas, Nicholson, Andrews, and Moreau to realize the immense literature which has accumulated upon these subjects during the past twenty years. It seems to me that no one can dispassionately review the work, experimental and clinical, on ovarian secretion conducted during the past few years without becoming convinced that the ovary has another function besides that of ovulation. Grant you that the theory of ovarian secretion is not yet proved, and that there are many things about the subject of ovarian grafting at the present time we cannot fully explain. Is not this same thing true about many subjects? That does not mean that we should flout all the work which has been done along these lines. Rather, let each worker contribute what he can, whether along theoretical, experimental, microscopical or clinical lines matters but little, provided his contribution be made in all earnestness and truthfulness. Finally, is it too much to expect that in the end all contradictions will be made clear and that the scientific truth will prevail?

TABLE I.

Frequency of artificial menopause regardless of age or disease.

(173 cases.)

	OVARIES REMOVED (146 cases.)		OVARIES RETAINED (27 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
Absent,	15	10	7	26
Present,	131	90	20	74

TABLE II.

Severity of artificial menopause regardless of age or disease

(173 cases.)

	OVARIES REMOVED (146 cases.)		OVARIES RETAINED (27 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
None,	15	10	7	26
Slight,	27	18.5	9	33.3
Moderate,	54	37	6	22.2
Severe,	50	34.2	5	18.4

TABLE III.

Frequency of artificial menopause at various age periods regardless of disease (173 cases.)

OVARIES REMOVED (146 cases.)

Ages,	20-29 (22 cases.)	30-39 (60 cases.)	40-44 (45 cases.)	45-49 (15 cases.)	50 + (4 cases.)
	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.
Absent,	3 13.6	8 13.3	3 6.6	0 0	1 25
Present,	19 86.4	52 86.7	42 93.4	15 100	3 75

OVARIES RETAINED (27 cases.)

Ages,	20-29 (2 cases.)	30-39 (16 cases.)	40-44 (7 cases.)	45-49 (2 cases.)	50 +
	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.
Absent,	0 0	3 18.7	3 42.6	1 50	0 0
Present,	2 100	13 81.3	4 57.4	1 50	0 0

TABLE IV.

Severity and frequency of artificial menopause at various age periods regardless of disease (173 cases.)

OVARIES REMOVED (146 cases.)

Ages,	20-29 (22 cases.)	30-39 (60 cases.)	40-44 (45 cases.)	45-49 (15 cases.)	50 + (4 cases.)
	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.
None,	3 13.6	8 13.3	3 6.6	0 0	1 25
Slight,	4 18.1	11 18.3	8 17.7	4 26.6	0 0
Moderate,	9 40.9	18 30	19 42.2	7 46.6	1 25
Severe,	6 27.2	23 38.3	15 33.3	4 26.6	2 50

OVARIES RETAINED (27 cases.)

Ages,	20-29 (2 cases.)	30-39 (16 cases.)	40-44 (7 cases.)	45-49 (2 cases.)	50 + (0 case.)
	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.	Per Cases cent.
None,	0 0	3 18.7	3 42.6	1 50	0 0
Slight,	0 0	7 43.7	1 14.2	1 50	0 0
Moderate,	1 50	3 18.7	2 28.6	0 0	0 0
Severe,	1 50	3 18.7	1 14.2	0 0	0 0

TABLE V.

*Frequency of artificial menopause regardless of age or disease.
Kind of operation, supravaginal hysterectomy (127 cases.)*

	OVARIES REMOVED (107 cases.)		OVARIES RETAINED (20 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
Absent,	11	10	5	25
Present,	96	90	15	75

PANHYSTERECTOMY (46 cases.)

	OVARIES REMOVED (39 cases.)		OVARIES RETAINED (7 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
Absent,	4	10.2	2	28.6
Present,	27	89.8	5	71.4

TABLE VI.

*Severity of artificial menopause regardless of age or disease.
Kind of operation, supravaginal hysterectomy (127 cases.)*

	OVARIES REMOVED (107 cases.)		OVARIES RETAINED (20 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
None,	11	10	5	25
Moderate,	60	56.4	11	55
Severe,	36	33.6	4	20

PANHYSTERECTOMY (46 cases.)

	OVARIES REMOVED (39 cases.)		OVARIES RETAINED (7 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
None,	4	10.2	2	28.6
Moderate,	21	53.8	4	57.1
Severe,	14	36	1	14.3

TABLE VII.

*Frequency of artificial menopause regardless of age. Fibroids
(80 cases.)*

	OVARIES REMOVED (59 cases.)		OVARIES RETAINED (21 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
Absent,	6	10	5	23.8
Present,	53	90	16	76.2

TABLE VIII.

Frequency of artificial menopause regardless of age. Inflammatory disease (62 cases.)

	OVARIES REMOVED (56 cases.)		OVARIES RETAINED (4 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
Absent,	8	13.8	1	25
Present,	50	86.1	3	75

TABLE IX.

Frequency of artificial menopause regardless of age. Ovarian disease (25 cases.)

	OVARIES REMOVED (25 cases.)		OVARIES RETAINED (0 case.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
Absent,	3	12	0	0
Present,	22	88	0	0

TABLE X.

Severity of artificial menopause regardless of age. Fibroids (80 cases.)

	OVARIES REMOVED (59 cases.)		OVARIES RETAINED (21 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
None,	6	10	5	23.8
Moderate,	32	54.4	14	66.7
Severe,	21	35.6	2	9.5

TABLE XI.

Severity of artificial menopause regardless of age. Inflammatory disease (62 cases.)

	OVARIES REMOVED (58 cases.)		OVARIES RETAINED (4 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
None,	8	13.8	1	25
Moderate,	25	43.1	1	25
Severe,	25	43.1	2	50

TABLE XII.

Severity of artificial menopause regardless of age. Ovarian disease (25 cases.)

	OVARIES REMOVED (25 cases.)		OVARIES RETAINED (0 case.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
None,	3	12	0	0
Moderate,	19	56	0	0
Severe,	3	12	0	0

TABLE XIII.

Hysterectomy. Duration of artificial menopause. Cases up to February 1907 (115 cases.)

	OVARIES REMOVED (97 cases.)		OVARIES RETAINED (18 cases.)	
	No. of Cases	Per cent.	No. of Cases	Per cent.
$\frac{1}{2}$ year,	5	5.1	8	44.4
1 year,	12	12.3	2	11.1
2 years,	28	28.8	2	11.1
3 years,	25	25.7	0	0
4 years,	14	14.4	4	22.2
5 years,	10	10.3	1	5.6
6 years,	3	3.1	1	5.6

TABLE XIV.

Amount of ovarian tissue retained and its relation to severe artificial menopause.

	PART OF ONE OVARY (3 cases.)		ONE OVARY (20 cases.)		BOTH OVARIES (4 cases.)	
	Cases	Per cent.	Cases	Per cent.	Cases	Per cent.
None,	0	0	6	30	2	50
Slight,	0	0	7	35	1	25
Moderate,	2	66.6	4	20	0	0
Severe,	1	33.3	3	15	1	25

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RUPTURE OF THE UTERUS THROUGH THE CESAREAN CICATRIX.

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IN November, 1906, the writer had the misfortune to lose a patient by rupture of the uterus through the scar of a Cesarean section which he had performed in December, 1904. In order to ascertain the frequency of this accident, the mortality, etc., the literature has been searched, cases have been recorded and deductions of value have been drawn.

Frequency.—It is wonderful to note the great difference in the frequency of rupture after the old Cesarean section, as compared with the results following the new or modern operation.

Krukenberg,¹ in 1886, stated that, after the old operation, 50 per cent. of all cases resulted in rupture of the uterus during subsequent pregnancies. He reported 20 cases of rupture through the scar, with a mortality of 50 per cent. On the other hand, Olshausen, in speaking of the Prüssmann Henkel case (No. 12)¹⁹ stated that it was the only one of scar rupture in at least 120 Cesarean sections. In the literature of the last five years we have found the records of 18 cases, to which we have added two hitherto unreported cases, making a total of 20. Among these will be found one case (No. 11)¹⁸ where the uterus was not sutured at the time section was performed, and, properly such a case might be excluded from our statistics. When one considers the large number of sections which have been performed, many of which have not been reported, the accident is seen to be of comparatively rare occurrence. In spite of the infrequency, however, the nature of the accident is so grave that one must keep the possibility of the emergency constantly in mind.

Etiology.—Much has been written in regard to the cause of rupture, but briefly, there seem to be two factors in the etiology.

One is the natural weakness of a cicatrix, whether in the uterus, abdominal wall or perineum, and the other is the invasion, so to speak, of the musculature of the uterus by foci of decidual cells. In Prüssmann's case, decidual tissue had invaded the muscular tissue about the incision and had even extended to the serosa. Sinclair² believes that if silk were used for suture of the uterine wound, rupture would seldom or never occur; but in at least two of the reported cases, those of Woyer and Everke, the rupture occurred in spite of silk sutures. We believe that if good approximation of the edges of the wound is secured, and interrupted sutures of chromic catgut are used, the result will be perfect, as far as complete union of the parts is concerned.

Diagnosis of Rupture.—In many cases, especially in the complete variety, there are the typical symptoms of sudden cessation of pain following a severe uterine contraction, with evidences of shock, increase in the pulse rate, vomiting and cold sweat. The fetal parts can be palpated with greater ease, the fetus is more movable, and the contracted uterus may be felt. By vagina, the presenting part has slipped away from the brim, and there may be external hemorrhage. In several of the

reported cases, however, the rupture was not suspected until the operation for section was performed, and in one case a diagnosis of appendicitis had been made. Evidently, the condition was not discovered in some cases, for operation was not performed until hours had elapsed since the rupture had taken place. In our opinion, labor after Cesarean section should be anticipated, but if one is called in to see a patient who is having severe uterine or abdominal pain, at or near term, the abdomen should be opened at once.

Repeated Cesarean Section.—Wallace,³ in his exhaustive monograph on repeated section, collected 96 cases, 43 of which had had two operations, 15 had had three, one had four, and one, the celebrated Frau Rittgen case, had five, the last resulting fatally from general peritonitis. Kriwsky,⁷ in 1905, reported 88 cases, 72 of which had two sections, 13 had three, and three patients had four. Many other instances have since that time been reported, among them that of Sinclair,² in which four sections have been successfully performed on the same patient. The mortality of repeated section is stated by Wallace³ to be 6.45 per cent. (4 in 62), or including death from repeated fundal incision, 7.93 per cent. This certainly compares favorably with the mortality of primary Cesarean section, which in the hands, of all operators, is between 5 and 10 per cent. In the hands of experts, the mortality of both classes of cases is probably less than 5 per cent.

Mortality of Rupture through the Scar.—Krukenberg,¹ referring to the old operation, quoted a mortality of 50 per cent. Very different has been the death rate in the cases reported and referred to in the literature of the last five years. Of the 20 reported cases, 16 recovered, three died, and the result in one case (No. 4)¹¹ is unknown. Note must be made of the fact that in case No. 11,¹⁸ the uterus was not sutured at the time of the section, and we have included in our cases of recovery the case of Lobenstein, for when the patient was ready to sit up on the tenth day pneumonia set in, which terminated fatally on the seventeenth day. This death can certainly not be attributed to the operation. The mortality is, therefore, 15 per cent. In each of three fatal cases the rupture was complete, the child having entered the abdominal cavity, and in one case laparotomy was not performed until two days had elapsed from the onset of labor. In my own case, the patient was dying when the laparotomy was performed, some five hours after pains had commenced, at the

end of the eighth month of pregnancy. When one compares the 15 per cent. mortality with the mortality of rupture of the uterus in general one is astonished that the figures are so much lower. In recent years the mortality has decreased, but the figures given below give some idea of the appalling death rate from rupture. Dorland⁴ collected from the literature of the three years from 1901 to 1903, 50 cases with a mortality of 24 per cent. Ivanoff⁵ stated that, in the Moscow Maternity, from 1877 to 1901 there had been 124 cases of which 98 died, giving a mortality of 79 per cent. The same author quotes Klien, who gives 56 per cent. recovery by operative methods, and Kolomenkin who gives 53 per cent. recovery by operation (but excluding cases of laparotomy and suture, 64 per cent.). Lobenstine⁶ quotes 37 cases with a mortality of 73 per cent., but states that in the last six cases the mortality was only 33 per cent. The fact must be considered that in the case of a patient who has had a Cesarean section, the treatment of a subsequent pregnancy and labor is frequently referred to experts, which would naturally account for the smaller mortality. The fetal mortality is very high. Of the 16 cases where the result for the child is known, the child lived in three, giving a mortality of 81 per cent. The child died in every case of complete rupture, and when the child was alive the rupture was small.

Variety of Incision and Character of Rupture.—The incision was longitudinal in thirteen cases, fundal in six and probably fundal in the remaining case of the twenty. Of the three fatal cases, two had had the longitudinal incision, one the fundal. In recent years the anterior incision has been used much more often and, indeed, there is no reason to believe that there is any advantage in the fundal incision. We believe that the greater frequency of rupture with the longitudinal incision is due to the very much greater frequency of that incision. The rupture was complete (by which we mean that the ovum passed out of the uterus into the abdominal cavity) in fourteen cases, partial in five and in one case unknown. All of the partial and eleven of the complete cases recovered.

Treatment of Rupture.—Hysterectomy was performed in twelve cases, with two deaths. Suture of the wound was the treatment in six cases, all of which recovered, and in my own case the patient died before any treatment could be instituted. In Schütte's case (No. 9),¹⁶ the operation was done some days after the rupture, and the uterus was well involuted. Whether

the uterus was sutured or not we do not know. The results where the rupture was sutured were all favorable, and yet many operators perform hysterectomy for the treatment of the condition. In the hands of experts either plan of treatment will in most cases be successful, but in clean, simple cases where the tear is not ragged, there is no reason why the uterus should not be sutured. Certainly in the hands of one who is not expert in abdominal surgery and when the patient is in bad condition the suture offers a quicker and safer method of treatment than hysterectomy. Quoting again from the statistics of Dorland,⁴ which refer to rupture of the uterus in general, we find that the uterine wound was sutured in ten cases, only one of which died. Five of the nine women who recovered after suture became pregnant again. In three of these, labor was normal, in one case forceps were used, and the fifth was terminated by induction of labor at the thirty-third week. These figures, which indicate a mortality of only 10 per cent. after suture and the successful termination of pregnancy in five cases, certainly indicate that the plan of treatment by suture is eminently successful and, therefore, should, as a rule, be advocated. According to the statistics of Schultz, Valenta, Klien, Kolomenkin, Dorland and others, the operative treatment of rupture in general offers the best results, and in this opinion, especially where the patient is surrounded by the proper conditions and is under the care of a skilful operator, we must agree. Speaking again of rupture in general, we believe that in the absence of the above conditions, when rupture has occurred, the fetus should be extracted by forceps, version or craniotomy, after which the uterus should be tamponed. If hemorrhage continues, or if the necessary preparations can be made, abdominal section should be performed, and the uterus sutured or removed as the operator may elect.

Prophylaxis, Including Sterilization, Time of Operation and Technic of Cesarean Section.—The question has arisen: "should a patient, in the presence of absolute indications for Cesarean section, be sterilized at the time of the first section?" It seems to me that in the absence of any condition, such as carcinoma or fibroids, which in itself would indicate the removal of the uterus, the question of future pregnancy should be answered before the Cesarean is performed. The danger of repeated section and the possibility of rupture of the uterus during pregnancy and labor, should be put before the patient plainly, and, in our opinion, if the woman knowing the facts of the situation elects to undergo

repeated Cesarean sections, she should be allowed to do so, and, indeed, she may do so without great risk, if we may judge from the figures which have been already stated. If the patient is opposed to the risk of a second or subsequent section, sterilization should be performed. The simplest way of doing this is to resect a portion of each tube. Ligature alone is not sufficient, as the case of Galabin (No. 6)¹³ will prove. Sinclair² is violently opposed to sterilization, quoting the small mortality of repeated section and the infrequency of rupture of the uterus. He says: "Sterilization and hysterectomy are rapidly entering the limbo of deplorable episodes in the history of obstetrics and gynecology." Galabin and Green are equally emphatic in their views on the subject.

With reference to the time at which operation should be performed, we believe that it is better to anticipate labor by a week or ten days, in order that the operation may be performed, at a convenient time, with proper surroundings and good assistants. Should labor set in earlier than had been expected, we advise that the Cesarean operation be performed as soon as possible. In many of the recorded cases labor had been in progress for a number of hours, and each hour of labor adds to the danger of rupture. Experience has shown that results are fully as good when the operation is performed before labor commences, and, indeed, there are many advantages to be gained by operating at an elected time and place. Finally, we refer to the technic of the section, as entering into the prophylaxis of the repeated operation and subsequent rupture. My method of performing the section is as follows:

The usual preparations for laparotomy having been made, the bladder is emptied by catheter, and the cervix, if closed, should be dilated to the extent of two fingers. An assistant then makes pressure at either side of the abdomen, thus bringing the abdominal and uterine walls closely together, and forcing the uterus well forward in the median line. An incision is then made, about six inches in length, in the median line of the abdomen, beginning at a point about three inches above the umbilicus. Sterile pads are then placed at either side of the incision, and then we make a median uterine incision of the same length as the abdominal. The child is seized by one or both feet, and quickly extracted. If in making the incision, the placenta is encountered, the hand is quickly forced through it, the child is extracted and the placenta removed at once. An assistant seizes the uterine arteries, and

makes digital pressure, sufficient to shut off the uterine circulation. The umbilical cord is then cut, and the child is handed over to an assistant. While this is being done, an assistant brings the uterus up into the abdominal wound, and protects the peritoneal cavity with gauze pads. The placenta and membranes are removed manually, and the uterus is dried with a gauze pad. If the uterus is well contracted no packing is necessary, but if it is soft and shows a tendency to relax, the cavity should be packed with sterile gauze. Interrupted sutures of No. 2-20 day chromicized catgut, are passed through the inner two-thirds of the muscular coat, down to, but *not including* the mucous membrane. Another layer of sutures of the same material is then passed through the peritoneum and the outer portion of the muscular coat, and finally a continuous suture of No. 1 catgut is taken in the peritoneal coat, in order to close in all raw surfaces, and to prevent contamination from the uterine cavity. All blood and clots are then removed from the peritoneal cavity, which is then filled with hot normal salt solution, after which the abdominal incision is closed, layer by layer, in the usual manner.

Wallace³, in his complete monograph, stated that (1) complete utero-parietal adhesions render repetition of Cesarean section simple and easy; (2) that all sections should be performed with a view to ultimate pregnancy; (3) that this can be done by the adoption of means to ensure complete utero-parietal adhesions. On the other hand, the presence of any marked form of adhesions other than complete utero-parietal, tends to render repeated section more formidable. He said also that to Michaelis (who, in 1836, performed the operation for the fourth time on the same patient, the last three operations being extraperitoneal), Sinclair and Spencer belong the credit of recognizing the truth of the principles just enunciated. Speaking of adhesions, Sinclair,² in his recent article on repeated section says: "Accumulating experience points to the conclusion that the patient is safest when, during a second or subsequent operation, the adhesions are most carefully preserved from interference." He then reports a case on whom four sections have been made. After the first section the uterus became adherent to the abdominal wall, as after a ventro-fixation. The second and third sections were practically extraperitoneal (the opening into the peritoneum being exceedingly small), and the fourth section was extraperitoneal. Sinclair has had no opportunity during the last five years, of operating a second time in any case where ventro-fixa-

tion had been intentionally performed at the time of the first section; but he thinks that the evidence from numerous reported cases points to the conclusion that if adhesions occur, and are respected, the danger is greatly diminished. He has seen no reference to a fatal result in such a case. His method of operating is as follows. After the usual section, the uterine wound is closed with silk. Fine silk sutures, one on each side, are introduced low down in the vesico uterine fold, well beyond the bladder laterally so as to close the fold and prevent intrusion of the intestines at some future time. He then passes a fine silk suture through the parietal peritoneum opposite the lower end of the incision, and then takes hold of a layer of uterus well out from the margin of the uterine wound. The suture is then passed back through the peritoneum and tied. This method of suturing is continued symmetrically on both sides, until the uppermost suture is slightly above the level of the lower margin of the corpus uteri. Then a stronger silk suture is passed through the fascia on one side of the wound, through the peritoneum and across "through a considerable, not very superficial portion of the uterus," then out through peritoneum and fascia and tied as a buried suture. Another suture is passed higher up, so as to include the uterine wound near its upper termination. This secures a wide area of adhesion, and the abdominal wound is then closed. Intestines and omentum are thus excluded from the field of future operations. Sinclair then gives his experience of thirty cases cured of sterility by hysteropexis hypogastria, who have gone through pregnancy and parturition without abnormal symptoms. Further results from this plan of treatment will be awaited with great interest. We have known rupture of the uterus to follow ventro-fixation, and time only can decide as to the value of the method.

Conclusions.—1. Rupture of the uterus through the Cesarean cicatrix is of rare occurrence.

2. With prompt operative methods the mortality is comparatively low.

3. When pregnancy follows Cesarean section, the patient may be safely delivered again by section in a large percentage of cases.

4. In repeating a section, labor should be anticipated by a week or ten days.

5. If section is to be repeated and labor sets in prior to the time elected for operation, the Cesarean should be performed as soon as possible after the onset of labor pains.

No. of Case	Reported by	Date	Period of Gestation	Cesarean Incision	Variety of Rupture	Treatment	Result, Mother	Result, Child
1	Kohlarok	1895	Full term? labor?	Longitudinal	Complete	Suture	Recovery	?
2	Weyer	1896	"Beginning of labor, 1 term?"	"	"	Hysterectomy	Death	Twins, both dead.
3	Guillaume	1896	"In the eighth month."	"	"	"	Recovery	Dead.
4	Tazett	1900	"Full term? labor?"	"	"	"	?	?
5	Eserze	1901	"End of pregnancy."	"	?	"	Recovery	Dead.
6	Galabin	1902	"Near term."	"	Complete	"	"	"
7	L. Meyer	1903	At term in labor	Fundal	Partial	Suture	"	?
8	Eklsten	1904	Full term in labor	"	Complete	Hysterectomy	Death	Dead.
9	Schulte	1904	At the eighth month	Probably fundal	"	Laparotomy, suture?	Recovery	"
10	Kerr	1904	In last month, in labor	Fundal	"	Hysterectomy	"	"
11	Ribemont-Desaignes and Rudolax	1904	at term in labor (hours)	Longitudinal (uterus not sutured)	Partial	"	"	Alive.
12	Prüsmann Henkel	1905	Full term? labor?	Longitudinal	Complete	Suture	"	?
13	Schink	1905	At term in labor	Fundal	"	"	"	Dead.
14	Weeth	1905	Full term? in labor?	Longitudinal	"	Hysterectomy	"	"
15	Wilder	1905	At term, in labor 20 hrs.	Fundal	Partial	"	"	"
16	Paidouk	1906	At term, in labor 24 hrs.	Longitudinal	Complete	"	"	"
17	Mabbett	1906	At term, in labor 20 hrs.	Fundal	Partial	Suture	"	Alive
18	Schneuer	1907	At term in labor 7 hrs.	Longitudinal	"	"	"	"
19	Lobenstein	1908	At term, in labor 18 hrs.	"	Complete	Hysterectomy	Recovered from operation but died of pneumonia on 17th day.	Dead.
20	Brodie and	1908	46 weeks, in labor 5 hours?	"	"	Laparotomy, death of patient following a few minutes later.	Death	"

6. Sterilization may be done at the time of section, if the patient so desires.

7. Suture of the laceration has proven successful, but in some instances hysterectomy will be the method of choice.

CASE I, reported by Koblanck.⁸ In this patient the anterior incision had been made, and rupture occurred through the scar. The intact ovum was found in the abdomen, the laceration was sutured and the patient recovered.

CASE II, reported by Woyer.⁹ Cesarean section had been performed by Chrobak in 1893, the anterior incision being made and silk used for suturing. Rupture occurred at the beginning of labor, the abdomen was opened at once and twins were extracted from the abdominal cavity. The patient died the same day. At the time of operation it was found that the wound of the Cesarean section had failed to unite through the entire thickness of the wall. Parts of the muscular wall had never united.

CASE III, reported by Guillaume.¹⁰ This case is of unusual interest, because of the fact that rupture occurred in the eighth month of pregnancy. Cesarean section had been performed three years before the anterior incision had been made and the wound had been sutured in layers. When the patient became pregnant again, she was advised to have labor induced in the eighth month, and the date decided upon was May 25th. On May 20th, at 9 A.M. the patient was seized with severe abdominal pain, especially on the right side. At 3 P.M. the pain was most severe. At 5.30 P.M. the pulse was small and thready and there were vomiting and chills. The abdominal pain was at this time not so intense, and the fetal parts could be distinctly felt, as the child had escaped into the abdomen. Laparotomy was performed a few hours later, the ovum found intact in the peritoneal cavity, the rupture was found to have taken place in the old scar, the uterus was removed and the patient recovered. Guillaume states that similar cases have been seen by Saint Moulin and Kufferath.

CASE IV, reported by Targett.¹¹ In the Cesarean operation performed two and a half years before, the anterior incision had been made. Complete rupture occurred subsequently and hysterectomy was performed. It is not stated whether the patient recovered or not.

CASE V, reported by Everke.¹² In this patient the anterior uterine incision had been made and the uterus sutured with silk. At the end of the succeeding pregnancy there was severe abdominal pain, and the patient was brought to the hospital in collapse. A diagnosis of appendicitis was made, and the abdomen when opened was found to be full of fresh blood. Rupture had taken place in the Cesarean scar; the uterus was removed and the patient recovered.

CASE VI, reported by Galabin.¹³ In the Cesarean operation the anterior incision had been made, and attempt had been made

to sterilize the patient by ligating the tubes. In spite of this the patient became pregnant again, and the uterus ruptured at about full term along the line of the Cesarean cicatrix. The child and part of the placenta had escaped into the abdominal cavity. Hysterectomy was performed and the patient recovered.

CASE VII, reported by L. Meyer.¹⁴ Two and a half years after Cesarean section for contracted pelvis, rupture of the uterus occurred at term. Laparotomy was performed and there was found a rupture of the former scar, from which the placenta projected, and there had been considerable bleeding. The uterine tissue was very friable. Apparently, rupture had not been diagnosed, laparotomy having been intended for simple Cesarean section. The operator was certain that the rupture had preceded the operation, the accident having occurred probably during severe pains while the patient was in the bath-tub. The fetus was extracted through the rupture wound and the latter was sutured. Recovery was uneventful. In the opinion of the operator, the original Cesarean wound had not healed thoroughly.

CASE VIII, reported by Ekstein.¹⁵ Age 33; IV-para first seen June 8, 1904. First two labors ended in perforation, the third in Cesarean section. The patient was warned against future pregnancies (rachitic flat pelvis), but the advice was unheeded. At term pains set in and were extremely violent. After a time fetal movements ceased and the patient was removed to a hospital. There were present meteorism, vomiting, hiccough, small pulse, etc., and the fetal heart sounds were inaudible. Sensitiveness to palpation seems to have interfered with diagnosis, as laparotomy was not performed for two days. Incision was made along the old scar, exposing fetus, membranes and placenta. The uterus was found contracted and ruptured exactly in the scar of the old fundal incision. The dead fetus, placenta and blood were removed and a Porro operation performed. Death occurred one and a half hours after operation.

CASE IX, reported by Shütte.¹⁶ Upon this patient Cesarean section had been performed sixteen months before the accident, leaving a fistulous tract from the uterus to the abdominal wall. At the eighth month of the pregnancy which followed the section, the patient fell out of bed, and three days later pain, vomiting, etc., set in, but subsided shortly to reappear in two weeks with evidences of uterine rupture. Laparotomy revealed a macerated fetus among intestinal loops. The uterus was contracted to the size of a fist. The laceration at the fundus was only 3 to 4 cm. long, and several intestinal fistulæ formed afterward and were eventually healed by operation.

The laparotomy wound was not closed outright, but with drainage. The uterus was strongly adherent to the intestines. No mention of closure of the small laceration in the uterus is made.

CASE X, reported by Kerr.¹⁷ The patient, a IV-para had

undergone Cesarean section two years before for flat pelvis. Labor had been allowed to proceed until the cervix was fully dilated; then the fundal incision of Fritsch was made, and an 8 lb. living child extracted. Recovery was perfect. On admission to the hospital for a second Cesarean operation, in the thirty-seventh week of pregnancy, the patient stated that she had felt no discomfort since the beginning of pregnancy. She was well nourished and in good condition. After an enema, there was abdominal discomfort, slight pain in the epigastrium, extending upward to the right. The patient fell asleep and slept four and a half hours. Then a bloody vaginal discharge appeared and the patient complained of slight pain in the right iliac region. Nine hours later the temperature was 97.6° F., the pulse 80, and there was pain all over the abdomen, but it was not very severe; there was no nausea or vomiting. Nine hours later there was considerable abdominal tenderness, but the pulse was good. One hour later the temperature was subnormal, respiration more rapid and tenderness more marked. The patient lay with legs drawn up, and there was exquisite tenderness over the entire abdomen, more marked to the right and below the navel. The fetal parts could be readily palpated, and the presenting part could not be felt through the cervix. The abdomen was opened along the line of the previous scar; a large amount of dark clots was found and the intact fetal sac was lying free in the abdominal cavity, the contracted uterus lying behind and below. The full term fetus was dead. The uterus showed a transverse rupture through the cicatrix of the previous section. The uterus was removed and the patient recovered. The interesting point was that there was slight alteration of pulse tension and rate and no collapse, although complete rupture had occurred.

CASE XI, reported by Ribemont-Dessaigues and Rudaux.¹⁸ The patient, age 29, had had a difficult labor in 1899, which was terminated by Cesarean section. The woman's condition was so serious that the uterus was not sutured. The peritoneum was sutured with catgut, and the patient recovered. In January, 1904, the woman went into labor again at term. After labor had been in progress for some hours, the patient suffered from very severe pain, and the pulse was accelerated. The fetal parts could now be easily palpated, and the diagnosis of rupture of the uterus was made. Laparotomy was performed several hours later. The uterus was found to be ruptured in the scar of the former section, and a living child was extracted through the rent. The Porro operation was performed, and the patient recovered.

CASE XII, reported by Prüssmann-Henkel.¹⁹ Age 40; III-para; seen January 21, 1905. First Cesarean in 1894, second in 1902. Admitted to the clinic shortly before term with symptoms of complete rupture of the uterus. Laparotomy was performed, and the fetus, membranes and placenta were found outside of the uterus, which was moderately contracted. The rupture was

found in the old scar, which was sagittal over the fundus and anterior wall. The edges of the rupture were freshened and ten muscular sutures were placed. This case was also complicated with a history of hernia of the abdominal scar, which had been operated on in 1904. The scar of this wound was excised for a finger's breadth. Recovery was smooth.

Commenting on this case, Olshausen states that he has seen but one such rupture in at least 120 Cesarean sections.

CASE XIII, reported by Schink.²⁰ Age 28. First seen, July 8, 1902. On Feb. 16, 1899, the patient had undergone Cesarean section for contracted pelvis. The fundal incision was closed by sutures in two planes; (1) a deep suture embracing the peritoneum and musculature; (2) superficial, peritoneum only. The woman became pregnant one year later. At term labor set in, but the child, found to be lifeless, was perforated and extracted. One year later another (the present) pregnancy for which she was admitted at term at the clinic. Strong pains were followed by collapse, necessitating removal to the hospital. There were marked anemia, cyanosis, chills, pulse small, 150-160. Rupture of the uterus was evident on palpation. Laparotomy, July 8, 1902. Incision in the region of the original abdominal scar. The ovum was found intact in the abdominal cavity and, together with a large amount of blood, was removed. The uterus was found to have been ruptured exactly in the site of the old fundal scar; at this point the uterine wall consisted wholly of serosa and a narrow strip of muscle. The edges of the wound were freshened in the entire thickness of the musculature, and catgut was used for the mucosa and adjacent musculature. Over these silk sutures were placed, grasping the entire musculature and serosa. The fetus was dead, but the mother made a good recovery, and has not been pregnant since.

CASE XIV, reported by Werth.²¹ This patient had a pelvis which was rachitic to a high degree. The first labor resulted in a dead child. The second pregnancy (1893) was terminated by Cesarean section with good recovery, the child surviving. The longitudinal incision was made a little to the left of the median line. The third gravidity ended in abortion at the fifth month. The fourth, in 1905, ended in sudden rupture soon after admission to the clinic. Laparotomy was performed the following day, and the ovum was found intact in the abdominal cavity. The uterus was firmly contracted. The rupture had taken place at the site of the old longitudinal scar. The Porro operation was performed and the patient recovered.

CASE XV, reported by Wyder.²² IV-para, age 29, entered the clinic October 4, 1904, in labor. The first labor ended in premature labor at the seventh month; the second labor, with transverse position and prolapsed arm, lasted three days. Cesarean section was then performed. Healing was complicated by suppuration, through the abdominal wound. The third labor was premature at the seventh month. None of the children survived.

The present pregnancy went to term. A generally narrowed pelvis was found and adhesion of the uterus to the abdominal wall and symphysis. Cesarean section was decided upon. About twenty hours after the onset of labor palpation revealed danger of rupture, for the fetal parts were easily to be felt. There was a difference of opinion between the woman's relatives as to the course to be pursued, necessitating telephoning, etc., and during the delay the patient experienced a severe pain, followed by prominence of the fetal parts, but with no signs of collapse. Immediately afterward laparotomy was performed. The tear measuring 3 cm. by 1 cm., was located in the fundus, and the ovum had not yet escaped. The adhesions between the uterus and the abdominal walls were separated, as well as intestinal loops, which adhered to the site of the old scar. The tear was then enlarged to permit extraction of the child (now dead), and a Porro operation was performed. The patient made a good recovery.

CASE XVI, reported by Paddock.²³ Age 36, with history of four protracted labors, three resulting in still-birth, the child in the fourth labor being born alive, but dying a few weeks later of injuries received at birth. At the fortieth week of the fifth pregnancy, Cesarean section was performed for contracted pelvis, at the onset of labor. A large living child was extracted, and the uterus sutured with three layers of catgut. The patient presented herself again in the fourth month of pregnancy, and was advised to undergo the section again. At full term the patient had severe pain, vomited and the abdomen was very tense and tender. Seventeen hours after the onset of labor the extreme abdominal distension made palpation impossible; the fetal heart could not be heard, the pulse was 90, the temperature 100° F., respiration labored. Seven hours later (twenty-four hours after rupture) the abdomen was opened; the intact ovum and blood clots were found in the peritoneal cavity and the uterus was well contracted, bleeding having ceased. The child weighed 9½ lbs. It was thought that the rupture had taken place twenty-four hours before operation, at the onset of labor, as the fetal movements which had been pronounced, ceased at that time. During the last month of pregnancy the uterus had increased greatly in size, with hydramnion. Supravaginal amputation was done, and the patient made a good recovery.

CASE XVII, reported by Mabbott.²⁴ Negress, age, 23 years, Cesarean section having been performed for contracted pelvis. The fundal incision was used. The uterus had been closed with three layers of sutures, but the endometrium had not been included. The patient was seen for the first time when labor had been in progress for twenty hours. The pulse was 102, respirations 24, temperature 99.4° F. The cervix admitted two fingers, and the vertex presented above the brim. The diagnosis of rupture was not made, but when the abdominal incision was made

for Cesarean section, blood and clots were found in the peritoneal cavity and the rupture was discovered. There was a laceration 7 cm. in length in the cicatrix of the fundal incision, and from this the fetal sac, about as large as the fist, protruded. A longitudinal incision, starting from the middle of the laceration, was made and a living child weighing $6\frac{1}{4}$ lbs. was removed. The ovaries and part of the tubes were removed, and the wounds in the uterus were closed with heavy chromicized catgut, the endometrium not included.

CASE XVIII, reported by Schneider.²⁵ The patient, a V-para, with a history of difficult labors, caused by contracted pelvis, was delivered successfully by the classical Cesarean section in 1904. Two years later she was admitted to the hospital in the first stage of labor, stating that she had suffered from severe pains for seven hours. The cervix was dilated about three fingers. During the bath the membranes ruptured, and meconium-stained fluid escaped. The abdominal incision was made in the old scar, and considerable blood was found in the peritoneal cavity. The lower two-thirds of the uterine scar was perfect, but in the upper third there was a rupture about the size of a button hole, through which a portion of placenta the size of a hen's egg protruded, having been gradually forced out by strong uterine contractions. The entire scar was then incised and the child extracted in a state of deep asphyxia, from which it was revived. The patient collapsed at this juncture, and, instead of performing a Porro, as the operator had planned, he quickly sutured the wound and sterilized the patient by resecting the tubes. Later, there was a postpartum hemorrhage, but the patient recovered and left the hospital with her child on the twenty-second day after operation.

CASE XIX, reported by Lobenstine, to whom the thanks of the writer are due for the history of this hitherto unreported case. First Cesarean section in 1904. Longitudinal incision in the anterior uterine wall, extending lower than the incision of the second section and not so far back in the fundus. Low abdominal incision. Second Cesarean in 1906. Short abdominal incision, entirely above umbilicus; longitudinal incision through the fundus.

When the uterus was sutured, the line of incision went over the fundus well to the posterior aspect of the uterus.

The uterus was sutured in three continuous layers:

1. First layer through muscle, No. 2 catgut;
2. Second layer through peritoneum and muscle, No. 3 catgut;
3. Third, a Lembert suture, No. 2 catgut.

The recovery was uneventful. In January, 1908, the patient when about to be confined, refused to come into the hospital. She went into labor, at term, about 6 P. M. one night and went into moderate collapse (after hard pains) at about 11 P. M. A physician saw her about 2 A. M. of the same night, but did not diagnosticate the condition, and left her after giving a hypoder-

mic of morphine. She was brought to my service in the hospital in the evening of this day, *i.e.*, about 18 hours after she had been first seen by a physician. There was extreme shock and all the signs of rupture of the uterus, especially *marked* abdominal tenderness. Laparotomy was performed at once; child and placenta were found in the belly with a moderate number of clots. The uterus was ruptured from the internal os up to the fundus in the median line, in one of the two previous scars. There is still some doubt as to which scar gave away. A supra-vaginal hysterectomy was done. The patient did finely after she had recovered from the shock and was to sit up on the tenth day, when she unfortunately developed a pneumonia and died on the seventeenth day.

CASE XX.—This patient was referred to me at the Post-Graduate Hospital by Dr. Brothers, and the following history was obtained: Age 35; nativity, Russia; now pregnant for the fifth time. All previous labors had been long and difficult, with still-birth in each instance, although fetal movements were observed up to the very last days. The pelvis was flat, the internal conjugate measuring 8 cm. Cesarean section was advised, and, on December 31, 1904, was performed at about full term. The usual longitudinal incision was made, and the wound was sutured in layers with chromicized catgut. The patient made a good recovery and left the hospital with her baby in good condition.

Early in August, 1906, the patient was again seen for the first time in her sixth pregnancy. She gave April 1 as the date of her last menstruation, and she appeared to be, as she herself thought, about four months pregnant. Life had not yet been felt, and the uterus appeared to be of four months size. The patient was anxious to have another child, and she was advised to have a second Cesarean operation in the latter part of December, when full term had been reached. On November 26, at 8 P. M., a physician living near the patient was called in to see her, and he reported that the patient was having "false pains," with a slight bloody vaginal discharge. She was advised to come into the hospital at once, and was admitted about 11 P. M. The patient was very restless and thirsty; the skin was cold; the pulse was 104, of poor quality; the respirations 44, and the cervix admitted one finger only. The abdomen was distended with fluid and the fetus could easily be palpated under the abdominal wall. Her condition grew steadily worse, and laparotomy was performed within an hour after her admission to the hospital. The fetus and placenta had passed into the abdominal cavity, which was filled with blood and clots. The child, weighing $7\frac{5}{16}$ lb. was still-born, and the patient died a few minutes after the incision was made. The rupture had occurred at the site of the old scar, but it is impossible to state when the laceration took place. There is, of course, the possibility that the patient had already reached full term one month before the estimated time, but the cervix

admitted one finger only, and, if in labor at all, the accident must have occurred at the very onset.

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144 WEST FIFTY-EIGHTH STREET.

REPORT OF TWO CASES: (A) MYXOSARCOMA OF THE ROUND LIGAMENT. (B) FIBROMA OF THE ANTERIOR ABDOMINAL WALL.*

BY

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(a) MYXOSARCOMA OF THE ROUND LIGAMENT.

CASE I.—Mrs. T. P., aged thirty-six years, was admitted to the Samaritan Hospital, December 2, 1907, presenting the following history: Puberty occurred at fourteen years and menstruation was normal for several years. As she grew older the menses became more painful. Married at the age of twenty-five, she had had one

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child and no miscarriages. The child was born when she was thirty-three years of age. The delivery was instrumental, and a plastic operation and abdominal section for removal of appendix were performed one year later. On admission to the hospital, the only symptoms were referable to the pressure of a growth in the right inguinal region. Urine was normal; blood examination showed 85 per cent. hemoglobin, 5,000,000 red blood cells, 8,000 leukocytes.

Operation was performed, December 4, under ether anesthesia, the growth, herewith exhibited, removed, and the fascia closed with chromic catgut sutures. The patient made an uninterrupted recovery and left the hospital on December 21.

Physical Appearance.—Size. 9 cm. long diameter and 5 cm. short. Tumor is a firm, solid growth enclosed in a capsule and has a rounded, smooth outline. Section reveals a white, smooth surface, resembling the cut surface of cheese, and not the circular arrangement of fibers peculiar to fibromata.

Microscopically, the characteristic features are areas of abundant spindle-shaped cells, nearly all of one type. The blood-vessels are thin walled. Areas of stellate connective tissue cells, which lie within a matrix of myxomatous material, are noted. No cystic spaces, glands, or muscular tissue are to be found.

Diagnosis—myxosarcoma. Examination by Dr. Duncan.

The round ligament is rarely the site of primary disease, although often secondarily invaded by extension from the uterus. As this ligament may be properly considered as part of the uterus, growths similar to those found in that organ are frequently observed in this part. The following tumors have been found in these ligaments: fibroma, carcinoma, and sarcoma; the first being the more frequent, and presenting itself as a pure fibroma or as a mixed type of tumor. These growths may be either extraperitoneal or intraperitoneal in their development. The extraperitoneal growths occupy the inguinal canal and the labium majus, and the intraperitoneal develop between the uterus and the internal abdominal ring. Their most common situation is upon the right side and they occur most frequently in multipara.

These neoplasms as a rule develop slowly, although Pozzi claims that they increase in size during pregnancy and even at each menstrual period.

Leopold has described a lymphangiectatic myoma of the round ligament. Sanger reports a fibromyosarcoma, and Cullen has described an adenofibroma. Nebesky has collected thirty cases

of fibromyoma of the round ligament, eighteen of which showed epithelial structure in them; two dermoids, three lipomata and four sarcomata.

The differential diagnosis between neoplasms of the round ligaments and other affections of the inguinal canal must be made. Hydrocele of the round ligament is rare, owing to the fact that the canal of Nuck is normally completely obliterated in the adult. The diagnosis is established by noting the location of the affection and the peculiar sensation communicated by the fluid. If the canal is patulous above, the fluid may be forced back into the abdomen. Inguinal abscesses and infected glands must be differentiated and inguino-labial hernia also be borne in mind.

Ovarian hernia is ovoid, having the shape of the organ and is exquisitely sensitive to percussion. Its increase in size at the menstrual period is even more marked than in certain fibroids and the uterus is laterally displaced (Pozzi). Irreducible epiplocele, which often acquire a fibrous consistence like that of a fibroid, would be impossible to distinguish were it not for the pressure of the epiploic cord stretched behind the abdominal wall. Hemorrhage in the substance of the ligament may result in the formation of a hematoma which will obscure diagnosis. The differential diagnosis between the different varieties of solid tumors of the ligament can be made only by a microscopic examination of the tissue removed.

The symptoms depend upon the size of a tumor and may be very slight in small growths. Painful pressure symptoms develop as the growth increases. According to Herman they are said to swell and become tender before menstruation but not so much as in ovarian hernia. In cases of mixed tumors the course may assume all the rapidity of malignant growths; and the possibility of such neoplasms assuming a malignant aspect is sufficient argument for their removal while small and nonsymptom-producing.

The only treatment is surgical. The operation is incision along the course of the canal like that of an Alexander operation, parallel with Poupart's ligament, but much longer and through the deep fascia; the exposure and ligation of the round ligament at the points of exit and entrance of the tumor, removal of the growth and closure of the canal. The wound should be carefully and firmly closed, layer by layer, with continuous sutures of chromic catgut, in order to prevent subsequent hernia.

(b) FIBROMA OF THE ANTERIOR ABDOMINAL WALL.

CASE II.—Mrs. J. H., aged twenty-nine years, married, Russian by birth, was admitted to Samaritan Hospital, October 23, 1907. She presented a negative family history, had had the usual diseases of childhood, had been perfectly healthy during her adult life. She had four living children, the eldest being nine years old and the youngest eleven months. For about one year she had noticed a "lump" on the left side of the abdomen which caused a great deal of discomfort. The growth was larger when she walked than when lying down. It was an oblong mass about four inches in length and three inches wide, firm and resistant, with no evidences of fluctuation and occupied the left lower quadrant of the abdomen. The patient had not menstruated since her last confinement and the breasts were distended and tender due to interference with lactation while in the hospital.

On October 23, an incision was made and the exhibited growth removed from beneath the fascia and anterior to the peritoneum on the left side of the abdomen. It was practically dissected out of the left rectus muscle. The muscle and fascia were closed with chromic catgut and the skin was closed with interrupted silkworm gut sutures.

Physical Appearance.—The tumor is 8 cm. long, 6 cm. short diameter, round in outline, hard, smooth, encapsulated, not lobulated. The section of the mass reveals its fibrous nature in the distinct concentric arrangement of the fibers. The color is white.

Microscopically, it is made up of connective tissue cells, elongated and spindle shaped and closely packed. The intercellular substance contains blood-vessels of distinct but thin walls.

According to Binnie fibromata occurring in the rectus abdominis are uncommon. Pfeiffer found that 89.8 per cent. of these tumors occurred in women and that all of these women had borne children. He believed that the normal proliferation of the abdominal wall which is found during pregnancy is, in these cases, kept up in limited areas and thus tumors arise. According to Olshausen their place of origin is, for the most part, in the posterior sheath of the rectus in *ruptures* which take place during pregnancy. In three-fifths of all cases they arise in women during pregnancy, and are usually found between the years of twenty-five and thirty-five in women, while in men they occur at a later period, that is between thirty-five and fifty years of age.

Occasionally a case is reported as congenital, or in advanced life. Most of these tumors are single, but at times they are multiple or appear in succession in different localities. Their rate of growth may be slow, or if occurring during pregnancy, rapid; and in the latter case they may shrink after parturition.

When a tumor is situated in a muscle or is secondarily adherent to it, it is movable while the muscle is relaxed, but as soon as the muscle is contracted the tumor becomes fixed. The term desmoid has been applied to these growths because of their tendon-like appearance in section. Warthin considers that many so-called desmoids of the abdominal wall are in reality spindle-celled fibrosarcomata of slow malignancy, but differing from the fibromata in that they grow by infiltration.

The true desmoid is malignant only by size, position, and tendency to necrosis. It does not infiltrate, nor give rise to metastasis; and if removed with its capsule entire it will not recur. Retrograde changes in these tumors are very common and are an indication for their early removal.

Montgomery reports the removal of a large desmoid tumor of the abdominal wall from a colored woman of thirty years of age, growing inward from the under surface of the muscular walls and filling the abdominal space, which growth upon removal weighed nineteen and one-half pounds.

Cullen (*Johns Hopkins Bulletin*, December, 1905) reports the removal of a fibroma springing from the sheath of the external oblique muscle, just below the margin of the rib, on a line with the nipple on the left side. The growth was lobulated and kidney shaped, 13 cm. in length and varying from 8 to 10 cm. in breadth.

The diagnosis of these growths is often rendered difficult by the thickness of the abdominal wall, or rather, the thickness of the tissue anterior to the growth, which makes it likely that an intraperitoneal tumor will be suspected when extraperitoneal growth is present.

The treatment of these growths is along the usual surgical lines and their extirpation should be advised as soon as the condition is recognized because of the danger of malignant or degenerative changes.

THE NECESSITY FOR THE ARTIFICIAL FEEDING OF INFANTS.*

BY

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WITHIN comparatively a few years the specialty of pediatrics has loomed into prominence and at the present time it takes its respected place among all the other specialties. In different parts of the world it has developed along different lines. In Europe, where the facilities for pathological work are greater, pediatricists have possibly done more work on the intimate diseased organ, while in this country probably infant feeding scientifically done, has claimed the larger share of attention and it is for this work that the American pediatricist is known.

The reason for this condition is not hard to find. The European physician, has not had to develop infant feeding into such a science as we have, because he does not, as a rule, have to modify cow's milk for the baby to be weaned.

There are, as is well known, bureaus or agencies throughout the different cities where wet nurses may at any time be obtained. Many women never, for a moment, consider the possibility of nursing their babies even though they may have an abundant supply of milk. Then among the poorer classes goats are kept which supply a milk which at least has two very important factors in its favor. First, that it is free from the tubercle bacillus, secondly, that it can be given fresh within a minute of its being obtained. Just consider for a moment the tremendous problems of milk preservation which absolutely do not present themselves. Goat's milk in this country is not yet a commercial possibility, besides the fact that it cannot be given to young infants without the same careful modification to which cow's milk is subjected.

In this country the wet nurse is unreliable for many reasons, consequently the physician has been forced to develop an artificial food, cow's milk, properly modified, being the standard. Why has scientific infant feeding been so late in developing into its present status? Has it simply advanced along with the general advance of all medical thought or is there a special

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reason? Is not the explanation to be found in the fact that every year fewer women can or will nurse their infants, thus throwing the responsibility of the infant's life on the physician's shoulders?

The object of this short paper is to discuss briefly the factors entering into this extremely unnatural and deplorable condition.

There are several influences which we all recognize as important which contribute to the waning power of the mother to nurse her infant.

First, heredity is to be considered. If the infant's maternal grandparents were drunkards, a marked influence would be expected on their daughter's ability to furnish milk.

If the maternal grandmother was herself unable to nurse her baby daughter, this girl in turn would be unable to nurse her baby, for it seems to be generally believed that once the power of supplying milk is lost it does not recur in that family during succeeding generations.

In the third place we are very apt to consider that the artificial life led by the modern woman is in a large manner responsible, and no doubt we are right in feeling that it is a contributing factor. It certainly is not hard to understand how such a delicate function as the manufacturing of milk might be destroyed when we consider the nervous and physical strain in which the woman of to-day lives. She probably has used up so much vitality that when the supreme test of motherhood comes she fails miserably at a most critical time. Dr. Holt says that the society woman who can nurse her baby more than four months is a rarity.

There are a very large class of women who are unable to nurse their babies, to whom none of the above mentioned influences may be applied. Their family history is good and they do not lead the life of the society butterfly. Is there, then, some further influence at work besides heredity and environment?

It has occurred to me that possibly there was another and a very important influence tending to interfere with this function and, if it be true, this is the only influence which we, as physicians, can control. At least it is worth a moment's discussion.

We are appreciating every day more and more the necessity for, and parents are learning to insist with much more emphasis that we enlarge the scope of our work from merely curing the child when it is sick, to keeping it well, which, of course, brings into play our knowledge of hygiene, and makes it necessary that we study carefully the habits and customs of the individual child,

that we may rectify any vicious or harmful tendencies before they may do harm. I am coming into contact this winter with mothers who request that I come in every two or three weeks whether they send for me or not, simply to see if everything is progressing satisfactorily, and to advise with them concerning many little details, such as its clothing, its bath and airing and finally its education.

The average age at which children go to school is six and many are in kindergartens for a year or so before that.

One would infer in glancing over the school requirements of twenty years ago and comparing them with to-day that the school authorities were of the opinion that the child of eight now had a much better brain than the child of eight twenty years ago.

Certainly there can be no other assumption since the child of to-day has many more intricate problems to master than his father had at a corresponding age. As a matter of fact the theory of evolution does not make it necessary that we consider such a state of belief to be correct. In fact we may assume that there is no material change from father to son, so far as his mental condition at birth is concerned.

Of course the real explanation is not hard to find when we remember that the child of to-day has so much more to learn than his father had and consequently must be pushed harder from the beginning.

It has been the proud boast of girls that they could learn anything boys could and were always able to keep abreast of their boy friends in their lessons and frequently to pass them by, and there is no doubt of this fact.

Is not now the time to stop and take stock? Is it not possible that now is the time to at least consider the inadvisability of continuing a parallel curriculum for boys and girls from early school days through college?

Is it not possible that girls have been put through too severe a strain mentally and physically to keep themselves abreast of the boys and to require the same education?

Has it not been the case that in rearing a girl too little attention has been paid to the fact that we are contending with a deeper and more mysterious problem than in raising a boy? Should not the question of a healthy body slightly dominate the importance of a modern education? Many women say "no" to this query, but I have always believed that when I ask them for

their opinion, they are under the impression that I advocate a race of Amazons absolutely benighted, whereas nothing is farther from my thoughts, for such a combination as is presented by a healthy mother with a well-educated mind can tend to nothing but a sound and well-balanced family, and certainly she is much better fitted to bring up children than any woman bodily perfect but lacking in education.

Should we not then, as physicians, consider that possibly the strenuous school life as lived by girls to-day is at least a contributing factor to the subject under discussion?

If there is any truth in this assumption, our duty becomes very clear, and our constant thought from a baby girl's birth should be that we must provide a course of life which will best fit that individual girl to be a successful mother, and I believe that this can be best accomplished by allowing the girl to be a little older before she goes to school, and after she does go have her course of studies so arranged that when she comes out of school or college she will be a well-educated woman, but not a physical or mental wreck through acquiring a deal of information unnecessary for the average mother.

It is perfectly true that the modern education for girls does not produce nervous or physical wrecks in every case, as a visit to any of the girls' colleges will soon convince one, especially if one happens to be there during the gala commencement week. Still I fancy that it has taken something out of them, else how explain the failure of a perfectly natural and physiological function.

In closing allow me to refer to one danger which has developed as a result of our perfected system of modifying milk.

The young graduate who has mastered the intricacies of percentage modification may allow his enthusiasm to destroy his patience and his judgment.

Armed as he is with many different formulas he may all too quickly decide to wean the baby, when a little patience and a little treatment of the mother might have yielded a good breast-milk. As my experience enlarges I find myself redoubling my efforts to supply a breast-milk, and I find myself approaching the matter of weaning a very young infant with increasing hesitation. Of course it can be done and is done every day with remarkable success, but there are always the cases which do not do well for a few days or weeks or do not do well at all, and one is not quite certain which case will do well and which will not.

Therefore I say that in teaching this subject in the schools let us be careful not to make the picture too alluring and impress upon the young men that the baby's stomach is not a test-tube. The pendulum is in danger of swinging too far.

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MENORRHAGIA AND METRORRHAGIA (UTERINE HEMORRHAGE).*

BY

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INTRODUCTION.

THE cardinal symptoms of gynecological diseases are bleeding, leucorrhea, and pain. It is difficult to state the diagnostic importance of bleeding, especially as regards its amount, character, and periodicity. However, bleeding alone does not enable us to classify gynecological diseases, although each gynecological trouble has certain disturbances either during menstruation or in the intermenstrual period. It is, therefore, unquestionably very important to have in addition a careful inspection, palpation, or test tampon (Von Schulze), and, if necessary, a bacteriological examination of the secretion with an accompanying pathological examination of scrapings.

To Olshausen (1875) undoubtedly belongs the credit of putting into practical application the method of curettage introduced twenty years before by Recamier, in France.

Though a simple operation, curettage is now regarded as one of the most important as well as the most widely employed maneuvers, not only for the sake of treatment but for diagnostic purposes. When the tissue in question is once obtained by curettage, we can clearly make a diagnosis, looking at the specimen first macroscopically, then microscopically. It is evident that there is no better method of learning the cause of uterine bleeding than by the employment of curettage. Even with the present improvement in technic, gynecologists are often forced finally to totally extirpate the uterus after repeated curettage has failed to check the hemorrhage.

Thanks to the generosity and courtesy of both Dr. H. A.

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Kelly and Dr. T. S. Cullen, of the Johns Hopkins University, I had the privilege of using their pathological material in this study upon the subject of "uterine hemorrhage." Under such circumstances I started to examine all slides of the scrapings which were curetted from patients suffering from menorrhagia or metrorrhagia, in whom the cause of bleeding was not found clinically. It is very true that the menstrual flow varies according to the individual as well as to the age of the same individual, therefore it is impossible to form any standard applicable to all women by which menorrhagia can be measured. However, as a rough measure, we may consider those cases in which the menstrual flow was prolonged longer than normal for the individual as menorrhagia, and those cases in which there was intermenstrual flow as metrorrhagia. As I have already indicated, I intend to describe the cases in which nothing was found as a cause of bleeding in the pelvic organs, or in which the changes were too trifling to account for the hemorrhagic condition. Among ninety-nine cases which I examined, one patient returning with the same trouble, there were nine cases in which my material allowed me to study not only the endometrium, but also the mesometrium, which I examined especially with regard to changes in its blood-vessels and its structure. All scrapings were hardened immediately so as to obtain a perfect picture of the endometrium. Of the gross specimens all except two were studied from preserved material, so that there was some difficulty in distinguishing whether the change was pathological or due to the preserving process. I was also obliged for the same reason to be content with only certain staining, using, for instance, only Van Gieson's stain for the connective tissue. Of the specimens of endometrium which I examined, the majority of the slides had already been made and diagnosed according to the routine method in the gynecological laboratory of the Johns Hopkins Hospital. However, I looked over these slides three times, making a note and an independent diagnosis for each slide, thus endeavoring to avoid any possible mistake. From the specimens of the whole uterus or partial resection from the fundus, I obtained ten sections from each part, that is from fundus, corpus and cervix, when it was possible. To be sure these were not regular serial sections, because as the tissue was very hard I did not succeed in making a thin section (between 10-15 microns) after mounting in celloidin. As staining material I used ordinary alum hematoxylin and eosin, Van

Gieson's and Mallory's stains, according to the directions ordinarily given.

THE PRESENT IDEA CONCERNING THE CAUSES OF "UTERINE
HEMORRHAGE."

"Menstruation with ovulation" was a quite well-known theory of Pflüger which prevailed among physiologists as well as gynecologists until the day when Leopold published his opinion concerning menstruation—"ovulation without menstruation," by which it is unquestionably clear that menstruation does not always go hand in hand with ovulation. Since that time there have been so many different opinions and observations that no definite conclusion can be drawn. Although it is such a difficult problem to solve even the physiological process, it is a still harder task to discover exactly the cause of uterine hemorrhage (menorrhagia and metrorrhagia) in each case. Notwithstanding this we could trace the pathological phenomenon into the physiological process by deductive reasoning. Since it is more natural to explain almost all pathological features from the physiological standpoint, we believe that it is very important to follow the investigation in both its physiological and pathological aspects. The causes of uterine hemorrhage are so numerous that I have not thought it necessary to describe those which have no interest for the present inquiry.

The common causes of uterine hemorrhage were well given by C. P. Noble in the following classification. First of all he says the causes of uterine hemorrhage vary according to the age of life, so as to be divided into three classes.

"1. In young virgins—there is lack of control on the part of the nervous system, both of the menstrual function itself and vasomotor nerves in general.

"2. In young child-bearing women—usually due to some mishap in connection with pregnancy and parturition.

"3. In women approaching the forties and those who are older it is of very suspicious import."

This classification is of value clinically, for by keeping it always in mind less time would be lost for the radical operation, the necessity for which is encountered very often by practitioners. In the preclimacteric age there is quite often profuse and obstinate uterine hemorrhage, the cause of which is very puzzling, nothing being found in the curettings and nothing made out in the uterus and appendages. This we used to call

"idiopathic uterine bleeding" or "essential uterine bleeding." For this unknown fact numerous authors contrive an explanation from the clinical standpoint and also from pathological investigation. However, so far as I could find from the published literature, the most satisfactory theories are the two following, one by E. A. Reinicke—atheromatous change in the blood-vessels—another by A. Theilhaber—*insufficiencia uteri*. As was mentioned by C. P. Noble, we must investigate more closely the cause of uterine hemorrhage in the preclimacteric age, because at this time there is a great tendency to develop a malignant growth, although this used to be neglected among the common people who regard it as the change of life, a mistake sometimes occurring even among physicians. The suffering of the woman from uterine hemorrhage is very great because of its interference with social life and of the many disturbances in the general system on account of the resultant secondary anemia. It is certainly true that there is more or less irregularity in the menstrual flow immediately before the menopause, just as at the onset of menstruation. Nowadays Pflüger's theory, "menstruation with ovulation," is not free from objection as has been mentioned; nevertheless the preclimacteric bleeding depends to a great extent upon the function of the ovaries, as Brennecke has demonstrated in six cases. Though there might not be the direct connection in time when menstruation comes in this way, yet whether the follicle was burst incidentally or not, it is reasonable to think that as the follicle was ready to burst, it always causes the reflex congestion in the genital organs.

There is constant development of germ cells in the ovaries throughout sexual life, which periodically makes the ripened follicle ready to burst, and this constant development of the germ cells causes the reflex congestion gradually with a certain stimulation. It is beyond our knowledge to measure how much stimulation is needed to produce the reflex congestion. In other words, it is now impossible to define the proportion between the stimulation and the reflex congestion; but we can say with certainty that this proportion depends in a certain degree upon the individual physical condition, especially upon the physical and pathological condition of the sexual organs, perhaps still more upon the pathological condition of the nervous apparatus which is in charge of conducting the reflex from ovary to uterus. It is not unusual to encounter cases of pregnancy

without preceding menstruation, and from this fact we cannot say that ovulation does not occur because menstruation does not appear, while the contrary conclusion is also not true. We understand that such a delay of menstruation comes from the deficient stimulation which is not able to bring on the reflex congestion of the sexual organs; in other words, the delay of menstruation is the deficient reflex congestion. If the development of the germ cells in the ovaries, namely the follicle development, is, under certain conditions, unable to bring on the reflex congestion as promptly as it should, and the accumulation of the successive stimulation is not sufficient to cause the ordinary menstrual flow, still the hyperemia and swelling in the endometrium increase more and more after stimulation, and finally at a certain point bleeding occurs. This hypothesis is one explanation of the frequent irregularity of the menstrual flow in the preclimacteric age. The histological change in the ovaries in the preclimacteric age was described by Kisch: "The albuginea is thickened in the majority of cases, so as to give some resistance to the bursting of the ripened follicle, and consequently it brings on a certain disturbance or some irregularity in the menstrual flow; that is to say, this thickened albuginea causes such a delay of the rupture of the ripened Graafian follicle that it will occur from six to eight weeks later." If this is the fact in the preclimacteric age, it is also readily acceptable that all other conditions which are liable to weaken the organism, especially all those disturbances which diminish the productivity of the sexual organs, might be explained in a similar manner.

The time of the menopause varies according to race as well as with the individual; however, it is a fact that it occurs at between forty and fifty in the temperate zone. Even in the temperate zone there are some differences according to the social condition as is mentioned by A. Theilhaber, for instance, it occurs at from forty-eight to fifty-four years of age among the higher class, and at from forty-two to forty-eight years of age among the laboring class. Because of the different clinical material the observations made by all authors differ. Borner attributes uterine hemorrhage in the preclimacteric period to the brittleness of the blood-vessels and also to the abdominal stagnation which might be accounted for as a temporary functional disturbance of the vasomotor nerves. In a similar connection Scanzoni noted the senile rigidity and the brittleness

of the blood-vessels. Reinicke is the one who has most carefully studied both the pathological and the histological processes. Numerous cases of sclerosis of the blood-vessels have been reported, as for instance by Limmonds, Pichevin and Petit, Marchese, Cholenmogroff, Dupuy, Balin, and Dieterich. Corresponding with the term "apoplexia cerebri," the expression "apoplexia uteri" was used by Cruveilhier, von Rokitansky, and Klob, but soon it was found by Kahlden and Limmonds that this was due to hemorrhagic infarction occurring incidentally during the death agony. To illustrate an observation in which the sclerosis and atheromatous changes of the blood-vessels are given as the primary causes of uterine hemorrhage, I refer to the report of E. A. Reinicke who has described four cases from the clinic of Prof. Leopold. No. 1, forty years, No. 2, forty-three years, No. 3, forty-three years, No. 4, forty-five years.

It is a striking fact that a similar process is found in all four cases. The changes in the blood-vessels were considered the cause of the imperfect contraction of the blood-vessels which led to uncontrollable uterine hemorrhage. While such a pathological change in the blood-vessels was noticed in all the cases, there was evidently an increase of the connective tissue in all, which might be considered as a secondary process produced by a disturbance of the nutritive condition. The pathological change in the endometrium might be likewise considered as a secondary process due to the disturbance of nutrition. The hypertrophy of intermuscular and perivascular connective tissue does not appear as scar tissue resulting from old inflammation, since he found no trace of this either in the history or by microscopical examination. According to the biological rule, where there is atrophy of the specific parenchyma of an organ, there occurs a hyperplastic increase of the connective tissue in its place and this holds true in the uterus. In a certain part of the uterus, the nuclei in the hypertrophied media of the blood-vessels disappear as a step of the characteristic hyaline degeneration which is quite common in these specimens, so that this process might be compared with "arteriocardillary fibrosis" which is noticed by Gull and Sutton in primary interstitial nephritis. On the whole this pathological change in the blood-vessels is due to arteriosclerosis, but not to the inflammatory process. So far as the etiology of the arteriosclerosis is concerned there are many causes, for instance alcoholism,

lead poisoning, and gout; among all, however, in these four cases none of these points is to be noticed in the past or present history, so there is only one possibility to be considered, namely, that this is simply one of the presenile appearances.

As already mentioned, the uterine muscle becomes atrophic gradually as the consequence of poor nutrition, the connective tissue increasing in its place. Even the abnormal condition in the endometrium is apparently more or less due to its nutrition. No one would hesitate to conclude that the primary arteriosclerosis is the only cause of the profuse bleeding at least in these four cases. A. Theilhaber, after a careful study of this subject, proclaimed that such preclimacteric bleeding is due principally to the pathological change in the mesometrium itself, that is to say in proportion as the muscle parenchyma is replaced by the connective tissue, this increased connective tissue causes imperfect contraction of the uterus, and on account of this imperfect contraction control of the bleeding is lost. To prove the observation of A. Theilhaber, the whole uterus was carefully examined in sixty-one cases by A. Meier, especially to find out the exact proportion of the muscle parenchyma and the connective tissue, first of all according to age, child-birth, and also numerous diseases. The writer succeeded in working out this proportion in percentages which are unquestionably a great help in supporting the explanation of A. Theilhaber. As the disease in the mesometrium, "metritis," was first well observed and studied by Scanzoni, and afterwards acknowledged by Fritsch, it is properly criticized by A. Döderlein. "Metritis" stands as "ein litterarisches Stiefkind" in present gynecology.

Indeed since the first bacteriological investigations in gynecology were made by Winter, there have been added new observations by different authors from time to time. In addition to this the recent wide prevalence of curettage, not only for diagnosis but also for treatment, inclines us to look upon all diseases in the mesometrium as secondary processes.

Thus far all diseases in the uterus and its appendages have started from the endometrium as a portal, very seldom from the peritoneum (except tuberculosis), and almost never do they have their source in the mesometrium, except fibromyoma or sarcoma. However, A. Theilhaber viewed the subject from an entirely different point. He considered that the mesometrium played the principal part in preclimacteric bleeding. The abnormality in the endometrium is not an inflammatory process,

but only a nutritive disturbance caused by the stagnation which is apparently due to the histological change in the mesometrium. The contraction of the uterine muscle is one of the important factors in regulating circulation in the pelvis, not only during pregnancy and child-birth but through life.

While contraction of the uterine muscle necessarily exists (there being often a weak contraction in the young and the old), there is throughout adult life contraction strong enough to regulate the bleeding, especially during the menstrual period. Indeed the menstrual flow does not occur constantly, only at certain times when it is readily recognizable that it is in consequence of the contraction of the uterine muscle. In fact, whenever of necessity the muscle does not contract of itself, there occurs in consequence an atrophy of the muscle fibers which may be replaced with connective tissue. As a general rule the more the muscle is exercised the greater is its development. It is contrary to the laws of gravitation that the venous blood should flow back to the heart, and therefore it is quite reasonable to argue that the muscle contractions are necessary to regulate the circulation.

It is a well-known fact that the muscle varies in its physiology according to its histological construction, whether it is striped or unstriped. Accordingly it is not unreasonable to look for a similar condition in the uterus; as illustration, suppose that the lower limb is kept still in a hanging position without motion, there usually occurs a stagnation of the venous blood followed by a secondary edema; and similarly, anyone who stands all day in the same position would certainly have a varicose dilatation of the veins and edema. It is the same in the case of the uterus; whenever there is a lack of contraction of its muscle fibers, there is, consequently, an unfavorable condition for forcing the venous blood in circulation. It is unquestionably very important to have a good contraction of the uterine muscle in order that the menstrual flow may be regulated in the same way as after child-birth, since whenever there is a lack of uterine contractions there generally follows either menorrhagia or metrorrhagia. Indeed, whenever such a venous stagnation occurs for a long time, affording overnutrition to the tissue, a consequent hyperplasia of the tissue is unavoidable. We used to call this condition "endometritis or metritis."

The change in the uterine muscle throughout life always occurs parallel with the change in its blood-vessels, that is,

while in childhood there is lack of development of the uterine muscle and in its blood-vessels, so in old age a parallel physiological change is always seen in the uterine muscle and its blood-vessels. On the contrary, in adult life we notice a good development of the uterine muscle and also a good distribution of its blood-vessels with large lumina, when all the structures should be under control of a good contraction, until there gradually occurs stagnation in the veins as well as in the lymph channels, so that in consequence there follows overnutrition, hyperplasia, and hypersecretion. Under such circumstances if there is a lack of good uterine contractions during the menstrual flow, menorrhagia is apparently unavoidable.

From the studies of A. Meier, who has obtained his results after a careful examination of the clinical symptoms as well as the changes at autopsy, we find that the uterine muscle reaches its greatest development between the ages of twenty and thirty. In an infantile uterus only one-third of the mesometrium is composed of muscle fibers, having a parallel development with that of its blood-vessels. But in the course of time, shortly before puberty, there begins a rapid development of muscle fiber and blood-vessels, so that at its point of greatest development two-thirds of the mesometrium is composed of the muscle fibers. It is a fact that during pregnancy there is an immense hypertrophy and hyperplasia of the muscle fiber, while after child-birth there is a diminution in the proportion of muscle fiber. After child-birth the uterus increases in volume principally through increase in connective tissue, because the connective tissue does not undergo a regressive metamorphosis as in the case of the muscle fiber, and only a partial regressive change takes place in the blood-vessels. This is shown in the fact that there is a difference in the length of the uterine cavity and in the weight of the uterus itself in nulliparæ and multiparæ.

The average weight is as follows:

35-40 gm. in nulliparæ	}	according to Demange.
60-70 gm. in multiparæ		
40-50 gm. in nulliparæ	}	according to Gebhard.
60-70 gm. in multiparæ		

Although there are some slight differences in the weight of the uterus according to different investigators, still it is a fact that the uterus of multiparæ weighs more than that of nulliparæ, undoubtedly on account of the increase of connective tissue. It is quite an interesting fact that beyond the pre-

climacteric age there is a certain change in the construction of the mesometrium, in which there is an increase of connective tissue, which replaces the atrophic muscle fibers, and there is also a narrowing of the lumina of blood-vessels known as "arteritis obliterans." After sixty years of age there occurs the same condition as in an infantile uterus, the only difference being that in old age the walls of the blood-vessels are much thickened.

The contraction of the uterine muscle ought to vary in proportion to the width of the blood-vessels so as to regulate the bleeding. But whenever there is a lack of contraction of the uterine muscle, a condition called "insufficiencia uteri" by A. Theilhaber, there results in consequence either menorrhagia or metrorrhagia. As was already mentioned, E. A. Reinicke says that the pathological change in the blood-vessels is the primary process, the increase of connective tissue being secondary, replacing the muscle which has atrophied through poor nutrition. A similar condition of the blood-vessels where the increase of connective tissue started from the adventitia as its center, was reported by Cholomogroff and Pechevin and Petit.

However, A. Theilhaber considers that this is not the genuine atheromatous process of the blood-vessels, but rather a physiological process exactly analogous with the narrowing and the obliteration of the ductus arteriosus Botalli. Such a thickening and contraction of the blood-vessels may be called a physical adaptation, because the lumina of the blood-vessels will be gradually narrowed and finally obliterated as the result of a gradual diminution in the amount of blood. It is a well-known fact that the blood supply of the uterus diminishes gradually after child-birth. The blood-vessels which are dilated during pregnancy will be narrowed and obliterated after child-birth by three factors, namely, resorption, contraction, and thickening. In the preclimacteric age also there is a similar process in narrowing and obliteration of the blood-vessels.

Even in the adult there are occasionally uteri in which we find increased connective tissue, as is noted by A. Meier. For instance, a woman who has suffered with tuberculosis or typhoid fever for a long time (where the degeneration of muscle fiber took place, replaced with connective tissue) may be overtaken with an atypical hemorrhage from the uterus, or on the contrary with amenorrhea, both of which depend simply upon the con-

tent of blood in the uterus itself. Such a notion of "muscle insufficiency" by A. Theilhaber is really a relative expression as he has described. "For instance, in comparing the development of the arm muscle, the normal development for a tailor is not quite a sufficient development for a blacksmith, so it is exactly the same with the uterus in which we notice very often the symptoms of so-called 'insufficiencia uteri' in spite of the well-developed uterine muscle." This fact depends a great deal upon the blood content in the uterus as well as the function of the muscle fibers which are under unfavorable conditions. So far as the matter is concerned there are two conclusions: first, the atheromatous change in the blood-vessels (E. A. Reinicke); second, the insufficiencia uteri (A. Theilhaber), as the causes of the uterine hemorrhage, at least in those cases where no points whatever to explain the cause of the bleeding are found, either in curetting or in exploratory laparotomy.

Let me enumerate briefly the causes of uterine hemorrhage as described by numerous authors.

I. GENERAL OR REMOTE CAUSES.

1. Acute infectious diseases—cholera, typhoid fever, small-pox, pneumonia, influenza, and malaria.
2. Constitutional anomalies—chronic anemia, rheumatic diathesis, scurvy, morbus maculosus Werlhofii, and obesity.
3. Poisonings—phosphorous poisoning, lead poisoning, and alcoholism.
4. Organic diseases—pulmonary tuberculosis (in the early stage), Bright's disease, cardiac disease, and liver disease.
5. Psychical reflex.
6. Syphilis.

II. LOCAL OR DIRECT CAUSES.

1. Tumor of the uterus.
 - a. Benign tumor—polypi, adenomyoma, fibromyoma.
 - b. Malignant tumor—carcinoma (in cervix and fundus), sarcoma and chorio-epithelioma.
2. Displacement of the uterus—retroflexio, retroversio, or descensus uteri.
3. Incidental conditions due to pregnancy and child-birth—miscarriage, hydatidiform moles, extrauterine pregnancy, subinvolution, and retention of the secundines.

4. Inflammation in the endometrium, all kinds of endometritis, hypertrophy of the endometrium (polypoid endometrium).

5. Pathological conditions of the tubes and the ovaries; inflammation of the tubes and the ovaries (causing pelvic adhesion); ovarian tumor (especially malignant); cystic ovaries and corpus luteum cysts.

6. Insufficiencia uteri.

7. Sclerosis or atheroma of the uterine blood-vessels.

Thus the cause of menorrhagia and metrorrhagia may be either one of the above or sometimes several of them combined. Speaking generally the remote causes might be detected from the history or the general symptoms, although there may be no definite lesion in the pelvic organ causing bleeding. In diagnosis, this is a special point to be kept in mind by the gynecologist who used to look for something only in the pelvic organs.

The direct causes mentioned in the above table can nearly always be found in a pelvic examination or in curetting, No. 6 and No. 7 excepted, which have been amply discussed above.

Now let me show what I have found from my material.

ANALYSIS OF CASES.

1. *Condition of the endometrium from ninety-seven cases examined.**

a. Abnormal condition of cervix,	6.
b. Acute endometritis,	1.
c. Subacute endometritis,	4.
d. Chronic endometritis,	10.
e. Hypertrophy of the glands,	12.
f. Polypoid endometrium,	8.
g. Normal endometrium,	56.

2. *Age.*

Under 20 years of age,	11.
21-30 years of age,	37.
31-40 years of age,	31.
41-50 years of age,	14.
over 51 years of age,	6.

3. *Result of treatment.*

Recovery,	73.
Improved,	22.
Unimproved,	2.

*The table contains *ninety-nine* cases but one patient was admitted twice and in another the scraping were not examined.

Improved is of course an ambiguous expression. In the "improved cases" the histological examination showed:

Normal endometrium,	14 cases.
Chronic endometritis,	2 cases.
Subacute endometritis,	1 case.
Hypertrophy of gland,	3 cases.
Polypoid endometrium,	1 case.
Erosion of cervix,	1 case.

The striking feature here is the comparatively numerous cases of "normal endometrium."

It is a striking fact that the two cases in which there was no improvement (No. 16 and No. 34) were both diagnosed "normal endometrium." No clue was found as to the cause of the bleeding except that No. 16 had malarial fever during the summer before admission, and No. 34 had an operation in which a small fibroid was removed. The last case strongly suggests adenomyoma on account of three points in the history: persistent menorrhagia, normal endometrium, and previous removal of a small fibroid.

4. *Marriage.*

a. Eighty-eight cases were married.

b. Of those over twenty years of age only three were unmarried.

5. *Miscarriages.*—Forty-four cases, that is nearly half of those examined, had had one miscarriage or more. To these forty-four cases should probably be added a certain number in which miscarriage was suspected, though nothing definite could be learned from the history.

6. *Child-birth.*—According to the history there are only three cases (No. 96, No. 42 and No. 87) which had had no children or abortion. A certain number of cases had not given birth to any children, but had miscarried one or more times, which has almost the same effect on the uterus and its adnexa. No. 68 had been married but six months, and No. 18 had had an operation for extrauterine pregnancy—right salpingo-oophorectomy.

7. *Leucorrhea*, forty-seven cases.

8. *Menstruation.*—The earliest onset of menstruation in whites was at eleven years, the latest at eighteen years. The earliest onset among the blacks was at eight years. Duration of menstruation varies from two to ten days.

CLASSIFICATION OF "ENDOMETRITIS."

On account of the very special construction of the endometrium and also of the constant changes to which it is subject during the sexual life of woman, it is difficult to classify endometritis. This task was first undertaken by Ruge whose classification is as follows:

1. Endometritis glandularis.
2. Endometritis interstitialis.
3. Combination form.

Though this is a simple classification of endometritis, it indicates very well the histological changes which occur in the endometrium during inflammation. As is well known, normally changes are constantly going on in the stroma as well as in the glandular structure of the endometrium during menstruation (every four weeks) as well as in the interval (premenstrual and postmenstrual), so it is almost impossible to find a quiescent condition of the endometrium. Since the physiology of the endometrium is still uncertain, it is often difficult to distinguish whether a histological change is or is not physiological. Similarly to Ruge, Gebhard classified endometritis as endometritis, (1) glandularis, (2) interstitialis, and (3) diffusa. In the strict sense we must distinguish real inflammatory processes from changes induced by mechanical irritation, but at the same time we must allow that the difference is principally quantitative. Gebhard considered the distance between the glands as the distinguishing point between physiological or pathological processes. This rule of Gebhard cannot, however, be applied to the premenstrual condition. The histological classification of endometritis is really a very difficult matter. Recently F. Hitschmann and L. Adler, employing the abundant material of Schauta's clinic, published their work on this subject. They do not accept Ruge's classification of glandular endometritis because they have always found exactly the same histological condition in the premenstrual stage. They also consider the infiltration of small round cells in the stroma as of no diagnostic importance, because a number of small round cells are scattered through the stroma in the normal endometrium, as well as lymph nodules of which the genesis is not quite clear. Therefore small round-cell infiltration, the ordinary sign of chronic inflammation, is, according to these authors, of no value in diagnosing the presence of chronic endometritis. They finally

conclude that the presence of the plasma cell is the only positive sign of chronic endometritis.

The view of F. Hitschmann and L. Adler, though undoubtedly extreme, will perhaps serve as a warning against the numerous nomenclatures so often incorrectly applied, and act as an impulse toward a more perfect classification. The biological rule that hypertrophy follows where we have hypernutrition is well exemplified in certain conditions where the endometrium has an abundant blood supply. Where one thus finds glandular enlargement without infiltration of leukocytic elements, the term glandular endometritis should, I think, be replaced by that of glandular hypertrophy. Although this condition is quite frequently called by writers the premenstrual stage, I believe this is really intermediate between them.

Independent of pregnancy and with no relation to the menstrual period, we very often find marked glandular hypertrophy which we noticed in twelve of the ninety-nine cases of menorrhagia and metrorrhagia.

In my studies I have used the classification which is employed in the Gynecological Laboratory of the Johns Hopkins Hospital. It is our desire to classify endometritis in a simple as well as in a proper way from a histological standpoint. Thus inflammation of the endometrium is divided into three classes: (1) acute, (2) subacute, and (3) chronic. This classification is similar to that of general inflammation depending upon its duration, and in this case we can readily recognize certain histological differences between these types according to whether the condition is acute, subacute or chronic. As was noticed by F. Hitschmann, it is very seldom possible to obtain such material as scrapings from acute cases. However polymorphonuclear cell infiltration, edema, and vascularization are three points by which we can make the diagnosis of the acute case, while the subacute case might be distinguished by its proportion of polymorphonuclear and small round-cell infiltration as well as some edema with hyperemia. In the chronic stage there is only small round-cell infiltration, although I am not positive whether the round cells change their shape into spindle form or not in this stage as is described by some writers. By the distributed condition of the small round cells it is generally distinguished from physiologically scattered leukocytes or lymph nodules of unknown genesis.

The cases here dealt with as menorrhagia and metrorrhagia

are those in which clinically we could not find the cause of uterine hemorrhage either in the uterus itself or in its appendages. After the examination of the scrapings, I was surprised to find the endometrium normal in fifty-six, or over half of my cases. I have called the endometrium normal when I could not find any abnormality whatever either in gland or stroma, and of course no infiltration of small round cells, while in all cases there are hemorrhagic processes with dilated capillaries giving a picture similar to that of the menstrual period. Though I was not able to explain the cause of uterine bleeding in every case after examination of the scrapings, I cannot overvalue the importance of curettage in gynecology.

It is unnecessary to say that a great deal depends upon the technic and the experience of the operator in detecting whether the uterine cavity is smooth or rough, soft or hard. The amount and appearance of the scrapings are both great aids in diagnosis; moreover we can settle whether a growth is benign or malignant by the microscope. Whenever we fail to ascertain the cause of bleeding by examination of the mucous membrane, it must be deduced by sound reasoning.

An endometrium in which we find only a hemorrhagic condition and dilated capillaries, might depend upon changes in the circulatory system. These conditions are possibly due to disturbance of the vasomotor nerves, otherwise they might be explained by the view of A. Theilhaber, as so-called "*hypoplasia muscularis uteri*." "*Ich glaube der grund dieser Blutungen ist meist darin zu suchen, dass die Entwicklung der Gefässe in ungleich rasherem Tempo erfolgt, als die der Muskeln.*" Sub-acute and chronic endometritis, where there is uterine bleeding, are mostly due to gonorrheal infection, and acute exacerbations occur from time to time, probably after the menstrual flow or some other mechanical irritation.

So far we have considered the condition of the endometrium, in the case of profuse uterine bleeding, from the histological standpoint. Now let us consider the problem further from the materials which were obtained by hysterectomy, partial hysterectomy or panhysterectomy (nonmalignant growth), with which we may investigate whether there is something wrong in the mesometrium or in its blood-vessels as the cause of the uterine bleeding. While my material is insufficient to settle the whole problem, it may aid in giving a general view of the subject.

CASES.

Path. No. 5123.—Mrs. E. K., white, fifty-two years of age, admitted to the Johns Hopkins Hospital on July 6, 1901, on account of uterine hemorrhage. She had two operations, the first on July 10, the second on July 25. Her convalescence was uneventful and she was discharged on August 17, after recovery.

Family History.—There is no hereditary trouble, except that her father was troubled with rheumatism.

Past History.—She was never very robust, but never had a severe illness except an attack of grippe six years ago after nursing an invalid husband.

Menstrual History.—Began at about fifteen years of age; flow was always free especially after the first child and remained regular up to six years ago, when she had a severe attack of grippe. Since then she usually bleeds more profusely and more frequently than once a month. During the last four years would at times have hemorrhage every three weeks, then none for perhaps three or four months. Since last April she has hardly had a whole week free from hemorrhage, at times very profuse, often coming on at night when perfectly quiet. Not quite so profuse during the last two years as formerly, but the bleeding is more continuous during the last three or four months, and not so profuse at any one time as formerly. Leucorrhea, very little at any time.

Maternal History.—She married three times and had two children. Both labors were normal, no puerperal trouble; each labor two years apart. One miscarriage about a year after the last labor, the cause of which was unknown. The last marriage two and one-half years ago.

Present Illness.—As seen from the menstrual history she was very thoroughly curetted twice, first in March, 1896, again in 1897. At that time she was told by the surgeon that the trouble was a fibroid thickening of the uterine lining, and she was kept in bed three months after curettement, with hemorrhage returning every three weeks. She has never had pain with hemorrhage until the last month or two, a griping or squeezing pain on the left side of pelvis, never severe and not continuous. Appetite very good, bowels very constipated for six or seven years, no definite urinary symptoms.

General Condition.—Rather thin, pale, sallow, appears anemic; pulse full, strong, high tension, regular except for occasionally dropping a beat, rate 90-96; pupils equal and react well, no arcus senilis. No palpitation except on exertion, no edema. Tongue clear and firm. Therefore, except for anemia general condition seems good.

Physical Examination.—Lungs negative. Heart, a systolic murmur at apex, heard over precordia and transmitted into axilla, otherwise nothing to be mentioned. Blood examination: Hemoglobin 44 per cent. Abdomen was full, rounded as normal,

everywhere a little tense, no deep masses felt. Left kidney not palpable, pole of the right just palpable on deep inspiration.

Vaginal Examination.—Outlet slightly relaxed, just admitting two fingers. Cervix normal, position high in vagina, points posterior; external os crescentic, normal size; lips smooth, normal consistency, freely movable. Fundus normal in anteposition, slightly large for a menstruating uterus, but of normal consistency, apparently smooth in outline. Lateral structures not palpable. No bleeding on examination. Hemorrhoids obstruct the anal orifice.

First operation, July 10, 1901. Curettage. Cervix easily dilated, large amount of necrotic appearing mucous membrane in rather small pieces. Iodoform packing was inserted in the uterine cavity. Second operation, July 25, 1901. Vaginal hysterectomy in ordinary way. Patient discharged in very good condition.

Gross Description of the Specimen.—Consists of an opened uterus. Externally there are no signs of adhesions. The squamous epithelium of the cervix is smooth and extends just within the external os. The lower uterine mucoſa is smooth, but towards the fundus is rough and granular, probably after curettage. The entire cavity measures 9 cm. in length and 5 cm. between cornua. The cervix is about 4 cm. in length. The muscle wall varies from 1.5 to 3 cm. in thickness and contains several small interstitial myomata.

Microscopical Examination.—The specimen consists of cervix, some cervical glands attached. Some of these are dilated, containing mucus; however they do not show any malignant characteristics. The epithelial lining in the cervix is almost denuded. The muscle bundles in wall are interlaced in several directions as is normal. A remarkable feature is diffuse hyaline degeneration of almost the whole specimen. There is likewise hyaline degeneration in the walls of the large blood-vessels, especially in the media, while the lumina contain the well-marked blood cells. Van Gieson stain shows an abundant degeneration of the muscle substance, some parts replaced by connective tissue.

Corpus Uteri.—Specimen consists of the endometrium and the mesometrium where the endometrium is covered with one layer of somewhat shorter cylindrical epithelium. The glandular structures as well as the stroma are apparently normal. The mesometrium shows also the normal structure of the interlacing muscle bundles, containing between them several cross-sections of blood-vessels which likewise appear quite normal. Van Gieson stain shows well-developed condition of both muscle fibers and connective tissue. As a whole, the appearance of the fundus uteri is just the same as that of the corpus uteri.

The history gives no clue to account for the uterine hemorrhage. The heart murmur might be understood as due to the

secondary anemia. However, there is one point to be especially remembered in this case, that she married three times and the last marriage took place two and one half years before. There being no permanent results after repeated curettages, hysterectomy was decided upon. As was noted in the gross description, the uterus is apparently enlarged and hypertrophied, having several small myomatous nodules in its wall. Sections from the cervix show marked hyaline degeneration of muscle substance as well as of the wall of the blood-vessels. This is readily recognizable as the regressive metamorphosis in the physiological process accompanying this age (fifty-two years). However, nothing is to be noticed in the sections of the fundus, which show only hypertrophy of the muscle fibers and also connective tissue running almost parallel; no obliterating endarteritis whatever is seen. The existence of small interstitial myomatous nodules and the prolongation of the sexual life are quite favorable factors for finding the organ with increased vascular supply, this overnutrition bringing about the polypoid growth in the endometrium and at the same time the persistent bleeding. Theilhaber says: "Arbeitshypertrophie, wie ich es auffasse, der Uterus ist bestrebt, den Fremdkörper zu eliminieren, aber Trotz dieser Hypertrophie besteht, Insufficienz des Muskels wieder einzeichnen das die Suffizienz und Insufficienz des Uterus muskels sich nicht immer deckt mit guter oder schlechter Entwicklung des Muskels. Es kann ein schlechter Muskel seiner aufgabe, das Venenblut fortzupumpen, völlig genügen; dann wenn wenig Blut im Uterus vorhanden ist." On the contrary even the well-developed hypertrophied muscle would lose its control under the increased vascular supply.

Path. No. 6250.—Mrs. B. S., white, forty-seven years of age, is the mother of two children. The last labor was eighteen years ago, no puerperal infection. She was admitted to the Johns Hopkins Hospital on November 11, 1902; operated November 12, and discharged December 5, after recovery.

Family history, negative.

Past History.—Usual diseases of childhood, typhoid fever when a girl. Since the birth of the second child she has been subject to nervousness; some dragging pain in lower abdomen and both flanks when on feet. So great has been her nervousness and discomfort that for five years she has been taking morphia by mouth almost daily. This was originally given her by her doctor. During past summer she has been taking less.

Menstrual History.—Onset when fourteen years of age, regular, moderate flow, of about four days' duration, pain rather severe for two days. This condition was maintained until March, 1902, when present illness began. She has leucorrhea, a white, thick, nonirritating discharge.

Present Illness.—At the time of regular illness in March,

patient had a severe hemorrhage lasting three weeks. Since then she has been having hemorrhages pretty constantly with intervals of only a few days to a week between them; has had, however, in last four weeks, no hemorrhage. During this time patient has been largely confined to bed and has lost considerable in weight and strength. Since onset of present illness, the pain has in no way been different from what she had before. Leucorrheal condition has remained precisely the same. Appetite fairly good; bowels regular.

✓ *Physical Examination.*—A sallow woman, rather sick looking, pupils equal and reacting promptly; conjunctivæ rather pale; lungs and heart entirely normal, pulse 84, regular, and of good tension. Abdomen flat, symmetrical; respiratory movements well transmitted, aortic movements present; tympanitic on percussion everywhere. On palpation, soft and normal feeling, no points of tenderness, no masses felt. Right kidney distinctly palpable; left kidney not palpable.

Operation.—Patient placed in the dorsal position and the uterus curetted for the sake of making a frozen section. The curettings were absolutely normal to the naked eye, and microscopically showed nothing suspicious of malignancy. The cervix was grasped with Jacobs' forceps and pulled down, the peritoneum being opened anterior to the uterus, between it and the bladder. This caused considerable bleeding, which, however, was readily controlled. A large iodoform gauze pack was then placed in the peritoneal cavity, and the uterus was grasped hand over hand with Jacobs' forceps until the enlarged, symmetrical, but otherwise normal-appearing fundus was delivered. This was removed by bisection. Tubes and ovaries were left in situ. The cervix was then whipped over with catgut and the bleeding very well controlled. There was still, however, some oozing which was difficult to stop, and pelvic drains and a vaginal pack were put in. Patient discharged, December 5, feeling perfectly well.

Gross Description of Specimen.—Uterus appears normal except slightly enlarged ($10 \times 6 \times 5.5$ cm. in each diameter), endometrium curetted. Appendages not attached. Walls 3 cm. in thickness. Uterine wall is apparently hypertrophied, endometrium normal.

Microscopical Examination.—The specimen from fundus consists of a part of the endometrium and the mesometrium. All surface epithelium is stripped away, which is due to the recent curettage and partly to the handling. The glandular structure reminds one of the normal appearance, with no evidence of any malignant growth. The stroma is composed mostly of fibrous connective tissue instead of the ordinary stroma cells; nevertheless some glands are surrounded by a few stroma cells, from which one could easily recognize that this shows quite a normal structure, and is the boundary structure between the endometrium and mesometrium. The mesometrium shows

only the normal structure of unstripped muscle bundles with several cross-sections of normal looking blood-vessels. A remarkable feature is that one notices many channels here and there between the muscle bundles. These are always lined with endothelium, and it is often somewhat difficult to tell whether these are lymph channels or small veins. Van Gieson's stain shows somewhat of an increase of connective tissue, otherwise no abnormality.

The specimen from the cervix consists principally of mesometrium with only a trace of the endometrium, from which it is practically impossible to give any opinion about the glands and stroma. However there are several dilated capillaries. The mesometrium shows about the same picture as in the fundus. Van Gieson's stain shows the connective tissue somewhat increased.

No cause can be found for the persistent uterine hemorrhage. Of course it is quite apparent that the daily use of morphia for the past five years has had no effect in causing the hemorrhage. The uterus is enlarged and hypertrophied. There is a slight increase of connective tissue, with a certain number of dilated capillaries and veins, consequently showing hypertrophy both of glandular structure and stroma. Such an increased blood supply causes hypertrophy of the uterus itself and also of the mesometrium, and finally an obstinate uterine bleeding.

Path. No. 7853.—Mrs. A. M. F., white, forty-three years old, and mother of two children; the last labor twenty-one years ago without any puerperal trouble; never had miscarriage. She was admitted to the Johns Hopkins Hospital on September 22, 1906, and has had three operations successively, and her main complaint was uterine hemorrhage.

Family History.—Nothing important.

Past History.—Nothing to be mentioned except diphtheria in 1900.

Menstrual History.—Began at fifteen years, always regular, duration three or four days with considerable blood. Never had much pain until onset of the present illness; never any clots of blood until the present trouble. She does not know whether she has had menopause or not.

Present Illness.—Patient was quite well until February, 1904, when she had influenza. In March, 1904, had her last menstrual period. The one before this came in February. Had no period between March and May; in latter month patient began to bleed and has had bloody discharge daily from uterus. Since this time has great deal of pain low down in pelvis on both sides, also in back. Patient bleeds much more when active than when lying down. Bleeding is less in amount since patient was admitted to hospital; passed a large number of blood clots. Appetite poor. Bowels constipated; troubled with hemorrhoids for a long time. Patient had two attacks of gall-stone

colic, the last one in August, 1904, in such a way that she was seized with a sudden attack of intense abdominal pain followed by vomiting, chills and fever, then blood was passed by bowels; the urine very dark, but no jaundice.

Physical Examination.—Patient is well nourished, stout woman of rather dark complexion; has good color and does not look anemic. Chest large and well built; lungs negative; heart, first sound has a slightly muffled quality, otherwise entirely normal. Abdomen symmetrical, liver, edge just reaches costal margin in right mammillary line, edge not felt, no masses anywhere in the abdomen, kidney and spleen not palpable. There is some tenderness low down in pelvis, but this is not marked. Very marked relaxation of the outlet with some cystocele and considerable rectocele; uterus in anteversion, somewhat enlarged; lateral structures apparently normal. One could feel along the left vaginal wall just below the cervix several wart-like growths; one of these was removed and uterus curetted. Bleeding being severe in spite of curetting led to a diagnosis of perhaps a fibroid change in uterus. Another operation, hysterectomy, double salpingo-oophorectomy and cholecystostomy. Uterus bisected though it looks apparently normal, yet on account of the excessive bleeding and considering her age, uterus was removed together with tubes and ovaries. Another incision was made and gall-stones also removed. Patient discharged on November 13, after entire recovery.

Gross Description of the Specimen.—The specimen consists of the fundus of the uterus (amputation about middle of the body) with both tubes and ovaries attached. The fundus is normal in size and on section the uterine cavity looks normal. The tubes and ovaries are free from adhesions and apparently normal; tubes are patent.

Microscopical Examination.—The specimen consists principally of mesometrium and partly endometrium which has no intact surface epithelium, this probably being due to the recent curettage. The endometrium shows more fibrous structure in the stroma than usual and the glandular structure shows evidence of shrinkage, so that these stand separated everywhere from the stroma, with some gaps. This process is unquestionably due to the preserving of the tissue. The lumina of the glands contain desquamated epithelium but nothing else. The mesometrium is apparently normal, showing several cross-sections of blood-vessels which have filled up with the blood cells, otherwise no abnormality. Another section from the left cornu consists entirely of muscle wall which has apparently the usual structure. The only remarkable feature is the blood-vessels, many of which have comparatively large lumina and are full of blood cells, while some of them have very thickened walls so as to be almost obliterated. Between the muscle bundles where the connective tissue stands as the perimysium, one notices an aggregate of peculiar looking cells which have rather

elongated nuclei entirely different from ordinary connective tissue nuclei. However, from the distribution of these cells they can be nothing else than connective tissue nuclei which are cut in different directions. Van Gieson's stain shows an apparent increase of connective tissue.

Neither history nor microscopical examination gives any clue to explain the cause of bleeding except the marked relaxation of outlet, there being cystocele and rectocele which very often cause stagnation in the uterus itself. So an increased blood supply, which I have mentioned in the preceding case, may likewise be the cause of this case.

Path. No. 9018.—Mrs. L. W., white, thirty-seven years of age, was admitted to the Johns Hopkins Hospital on September 18, 1905, for her complaint of metrorrhagia.

Family History.—Nothing important. One sister had an ovarian cyst removed.

Past History.—Usual children's diseases, scarlet fever, pneumonia two years before admission.

Menstrual History.—Onset was between the ages of twelve and thirteen, quite sudden and profuse, three to five days' duration. No dysmenorrhea, only a little constitutional disturbance. Last period was on September 3, just fifteen days before admission.

Marital History.—Married twenty years; eight children, the youngest two and one-half years old; had great difficulty with the first labor, but no instruments; was torn but not repaired; puerperium uneventful. Third child born hastily, patient weak for nine months after this. Five miscarriages, the last three months before admission. Leucorrhea off and on for twenty years, at times profuse either before or after menses, inoffensive and not irritating. No urinary trouble; bowels regular; appetite good.

Present Illness.—For thirteen years before admission, the patient has had a strange choking feeling under costal margin, the onset of which dates from the birth of her third child. After that she was weak for nine months. When patient sits down, she has to sit on left buttock and then turn body straight, for she has a feeling as if something presses from symphysis to sacrum when sitting. In the last four years her condition has been much worse, incapacitating her from work half the time. In May, 1905, the menstrual period lasted from May 3 until June 30, by which patient was very much prostrated. Present menstrual period has, however, been normal. Bowels regular; appetite good. Patient states that "this choking sensation" often induces nausea; patient has vomited several times and describes it as similar to vomiting in pregnancy.

Physical Examination.—Rather pale; lungs negative; heart sounds clear. Neither kidney palpable. Abdomen relaxed. Some indefinite tenderness on deep pressure at various points.

The vaginal outlet is moderately relaxed. Bartholin's glands not palpable; a slight leucorrheal discharge; cervix bilaterally lacerated. The uterus is low down and cervix points towards the symphysis. Fundus is in retroposition; seems very heavy; apparently is myomatous although no nodules are made out. The adnexa are not made out. Patient complains of marked abdominal tenderness, which makes the examination unsatisfactory. Rectal examination negative. Examination under ether shows the vaginal outlet somewhat relaxed. Cervix rather soft; fundus enlarged to about one and a half times its normal size, feels soft and boggy; no definite nodules made out; left ovary enlarged and cystic; right tube and ovary normal.

Operation.—The abdomen was opened in the median line below the umbilicus. The uterus was found to be large, soft and boggy, but with no evidence of myomatous changes. On account of the persistent bleeding of which the patient had complained, the uterus was opened on its anterior surface. The mucosa of the uterine cavity was markedly hypertrophied, but there was no evidence of malignancy. An attempt was made to close the incision in the uterus, but on account of the extreme softness of the uterine wall and the ease with which the sutures tore out, it was found impossible to thoroughly control the bleeding. It was then decided that it would be safer to do a hysterectomy. The uterus was removed in the usual manner, commencing on the left side. The ovarian vessels, round ligament and uterine vessels were doubly tied with Pagenstecher and catgut. The mucosa of the cervix was touched with the Paquelin cautery; the cervical stump was closed over with a few sutures of plain catgut, and the peritoneum was brought over all raw areas. The vermiform appendix was removed on account of its adhesion to the parietal peritoneum behind the cecum, and then the abdomen was thoroughly explored. The stomach and the pylorus were found to be normal; the gall-bladder was normal, no stones. The right kidney was somewhat movable; the left kidney normal. The spleen was normal, no disease found in the omentum. The abdomen was then closed in layers with catgut throughout.

Gross Description of the Specimen.—Specimen consists of uterus (amputation at internal os) opened on posterior surface, and the vermiform appendix. Uterus is a little enlarged, walls 2.5 cm. in thickness; the mucous membrane is hypertrophied but otherwise does not appear to be pathological. Blood-vessels of uterine wall are prominent. On anterior surface of uterus is an incision 5 cm. long which is closed with catgut. The vermiform appendix is 6 cm. long, a small strip of mesentery attached, no adhesion, lumen patent, contour uniform.

Microscopical Examination.—Specimen consists of the mesometrium and the endometrium which is apparently thickened (5–6 mm.). The mesometrium is interlaced with the unstriped

muscle bundles in the ordinary manner, showing several blood-vessels cut transversely; however nothing else of any importance. The endometrium is stripped of its surface epithelium, apparently by the handling. The glandular structures are markedly convoluted, of corkscrew shape, and also increased in number, so that in some places only a thin stem stands as the boundary between the glands, while some of them are dilated, containing mucus or blood. The lumina of the glands are lined with cylindrical epithelium in one layer. The stroma cells contain round, oval, and vesicular nuclei which are close together. There are also dilated capillaries, accompanied by some small round-cell infiltration, scattered through the stroma here and there. Van Gieson's stain shows neither abnormal proportion of the connective tissue, nor unusual condition in the blood-vessels of the mesometrium.

This patient, the mother of eight children and who had had five miscarriages, is a good example of subinvolution for which hysterectomy was performed on account of friability of the uterine tissue. The thickening of the endometrium is apparently due to the disturbances of the regenerative process, this naturally causing the persistent uterine bleeding.

Path. No. 9228.—Mrs. E. M. K., white, twenty-eight years old, was admitted to Johns Hopkins Hospital for uterine hemorrhage, November 15, 1904, and discharged on the twenty-sixth, after apparent recovery.

Family History.—Nothing important.

Past History.—Except the usual diseases of childhood, no severe illness.

Menstrual History.—Began at thirteen years, never regular, flow lasts from seven to eight days, loses considerable blood, at times has some pain before flow starts. Patient is bleeding now and has been doing so four or five months.

Marital History.—Married eight years; three children, the youngest two years old; no miscarriages.

Present Illness.—About the middle of June patient began to have bleeding from the uterus and this has continued up to the present time without ceasing. In June patient also began to have pains in lower abdomen on both sides. She does not know when she had last monthly sickness. Bleeding has been constant, but no serious hemorrhage; has never had leucorrhea.

Physical Examination.—Very large and healthy looking woman, of extremely good color. Chest organs all intact. Abdomen symmetrical; no masses; no tenderness; no organs can be palpated, because of the extreme size of the patient. No swelling or edema of the legs.

Operation, November 16, 1904. The uterus was thoroughly dilated and curetted; a considerable amount of tissue was obtained.

The patient left the hospital just one year ago and remained

in good health until April, 1905, when she was suddenly taken with profuse bleeding; had not menstruated since leaving hospital five months previously. The bleeding continued for six weeks until her physician scraped her womb which checked the bleeding. On July 29, 1905, patient had a monthly period accompanied by pain; lasted five days, never profuse, and did not clot. After that time patient did not bleed again until October 21, and then bled again November 6. Patient states that on August 5, she felt gradual onset of pain in lower abdomen, back and hips, sometimes sharp, sometimes dull; of course the pain was worse during menstruation.

Gross Description of Specimen.—Two slices of uterine wall, probably from fundus, 2 cm. thick. The mucosa looks normal; peritoneal surface also normal but the blood-vessels are prominent.

Microscopical Examination.—Specimen from fundus uteri consists of the mesometrium and the endometrium which shows a marked thickening (5 mm.). The endometrium shows only a few places where surface epithelium is intact; the glandular structures are cut mostly in oblique sections, some transversely, and do not show any marked hypertrophy. The stroma is deeply stained with hematoxylin in one place, but the rest very faintly where naturally the stroma cells are not dense and nuclei are somewhat swollen, while the dilated capillaries are abundant. Where the stroma cells are dense, the cell nuclei are more spindle form, and here and there are dilated capillaries containing some blood. There are also places of small round-cell infiltration, especially surrounding the glands. The mesometrium appears normal, the interlacing muscle bundles running in several directions. There are several blood-vessels containing blood, otherwise it does not indicate any pathological process. Van Gieson's stain shows a network of unstriped muscle fibers with connective tissue which forms the reticulum of the net, although it does not demonstrate any increase of connective tissue. The blood-vessel walls do not show any abnormal condition. In another section there are somewhat peculiar structures just near the surface epithelium; one is a little distance from the surface entirely enclosed by small round cells, another is plunged from the surface, and except the place where it is continuous with the surface is likewise enclosed by small round cells. Both parts were examined with a high power which showed nothing but a cluster of the stroma cells surrounded by small round cells.

As stated in the history, patient was of such extreme size physically that no organs could be palpated by the bimanual examination. It is quite common to meet with persistent uterine hemorrhage among fat women who are inclined to have more or less venous stagnation in the pelvic organs, so this might be one of the factors in her trouble. The direct cause of the bleeding is the unusual condition of the endometrium.

Path. No. 11708.—The history is omitted. Case No. 94.

Gross Description of the Specimen.—Portion of the uterine wall measuring $5 \times 2 \times 1.5$ cm., looks normal, mucous membrane has a normal appearance.

Microscopical Examination.—Specimen from the uterine fundus consists mostly of the mesometrium with only a small part of the endometrium attached. The mesometrium shows the usual picture of interlacing muscle bundles with several blood-vessels cut transversely with a somewhat thickened wall, but no degenerative process. With Van Gieson's stain there appear somewhat coarse bundles of connective tissue which divide the entire field into a network which has a thicker reticulum of connective tissue than usual; unquestionably this is a picture of an increase of connective tissue which evidently had its origin from the adventitia of each blood-vessel. In some large blood-vessels one will easily notice by the stain (acid fuchsin) that there is an increase of young connective tissue in the intima which seems to almost obliterate the lumen of the blood-vessel.

Nothing important in her history and in microscopical section. There appears a marked increase of connective tissue for her age, and also a thickening of the blood-vessel walls, some of them almost obliterated. So the cause of uterine bleeding might be attributed to the pathological change of the mucous membrane and also some lack of control of the uterus itself on account of an increase of connective tissue.

Path. No. 12026.—Case No. 97.

Gross Description of the Specimen.—Specimen is a uterus removed with the cervix and with both tubes and ovaries attached. The uterus has been opened on the anterior surface. It measures 11×8.5 cm. On the exterior it is everywhere smooth and glistening. Just above the cervix a small myomatous nodule can be felt in the wall of the uterus. The uterine walls measure 3 cm. in thickness, and the mucous membrane has apparently been curetted away before operation. In some places it is still left and is shaggy and abundant. There is no evidence of malignancy. In the posterior fundus there is a myomatous nodule in the wall near the surface. This measures 2.5 cm. in diameter. It is apparently typical fibroid tissue encapsulated, not degenerated. The ovaries and tubes are perfectly normal; there are no adhesions. No evidence of pelvic inflammatory disease. The cervix has been removed with the specimen and is slightly hypertrophied and cystic. There is no evidence of malignancy.

Two sections were cut; one from the region of the fibroid nodule, the other from the cornu (right) including the fundus.

Microscopical Examination.—The specimen consists of only a small part of the endometrium. The mesometrium is about one-third occupied by the fibroid nodule which is entirely en-

capsulated with shale-like fibrous tissue. Small endometrium is apparently due to the recent curettage. There is no particular feature except one dilated capillary. The already mentioned fibroid nodule is quite near the peritoneal surface (not exactly subserous), and is entirely encapsulated with the lamellar arranged fibrous tissue where some hyaline degeneration is scattered throughout this newgrowth, being more in the center. There is nothing of any importance in the blood-vessels. With Van Gieson's stain, the newgrowth appears to be composed partly of connective tissue but mostly of smooth muscle fibers, myofibroma. Another section from the right cornu and fundus shows the typical structure of adenomyoma, a part of the endometrium attached. Scattered through the mesometrium there are several places deeply stained with hematoxylin. These are readily recognizable as the invaded glandular structures. There are two cystic dilated glands which communicate with each other by a narrow channel, the smaller is about 3×4 mm., the larger cyst about 4×5 mm. The endometrium is stripped of its surface epithelium, again probably due to the recent curettage. Otherwise there is no abnormal condition in either stroma or glandular structure except for a somewhat dilated gland. The invading glandular structures in the mesometrium appear just as an island, mostly between the muscle bundles, surrounded by the same stroma cells as in the endometrium. Two cysts lined by a single layer of rather cuboidal epithelium. This wall is stretched into various thicknesses, where there are likewise a certain number of glandular structures, and some of them are somewhat dilated. Van Gieson's stain shows nothing of importance either in the connective tissue or blood-vessels.

According to the history, patient suffered a great deal with menorrhagia in the beginning, but this recently changed to metrorrhagia, and for this reason she was operated upon at the Frederick City Hospital by Dr. Hunner. She was discharged with an excellent result.

The uterus with its adnexa was sent to the gynecological laboratory of the Johns Hopkins Hospital for its histological examination. This microscopical examination has already been mentioned as the typical adenomyoma. Unfortunately I did not have an opportunity to examine the curettings. It is now quite common to meet with cases of persistent uterine hemorrhage of which adenomyoma is found to be the cause. The histological study of adenomyoma and the differential diagnosis with malignant growth was well presented by T. S. Cullen in his book on uterine cancer, and also by the same author in an interesting article on "Adenomyoma of the Uterus," which appeared in the *Journal of the American Medical Association* (January 11, 1908). Here he described in detail the subject of uterine hemorrhage, while he mentioned two characteristic types of the histological con-

ditions of endometrium which are frequently responsible for uterine hemorrhage.

Path. No. 12087.—Case No. 98.

Gross Description of the Specimen.—Specimen consists of two slices of uterus removed by longitudinal incision. Each piece of tissue measures 4x6 cm., and the wall of the uterus is 3 cm. in thickness. Around one border there is a rim of peritoneum about 5 mm. in thickness. The uterine cavity appears normal.

Microscopical Examination.—The specimen is composed chiefly of the mesometrium and a part of the endometrium. The mesometrium shows muscle bundles interlacing in the usual manner. There are several cross-sections of the large blood-vessels with a remarkably thickened wall. Here some of them are almost obliterated. There is some hyaline degeneration of the media, while the intima shows evidently a remarkable thickening of young connective tissue. As another remarkable fact, one notices so many gaps in this specimen scattered here and there, which look very much like lymph channels lined by endothelium but having practically no wall. Nevertheless some of them contain blood cells by which we can readily recognize the fact that some of them are remarkably widened capillaries, while the larger ones must be veins. The surface of the serosa appears quite smooth, no abnormality being visible. The endometrium is about 2 mm. thick, having almost no intact surface epithelium, which is due to curetting. The glandular structure does not show any abnormality, though one of the glands is markedly dilated. On the other hand, the stroma is very much injected, so that naturally many capillaries are enormously dilated, and small round-cell infiltrations cover very densely some parts of the specimen, so much so that the stroma cells stand in the background; this is, of course, an entirely different feature from the lymph nodules which are frequently found in the boundary of the endometrium. Besides this picture there are several glands which are quite far from the stroma of the endometrium, a condition which is sometimes noticed in adenomyoma. Another section shows about the same picture which deserves no further mention. Van Gieson's stain shows a network near the serosa, but coming nearer to the endometrium it is not such a regular network, this being due to the increase of connective tissue. Mallory's stain shows about the same picture, but more plainly than the former.

There is no point to be traced as the cause, and the somewhat unusual situation of the glandular structure is nothing more than what we notice frequently in the boundary between the endometrium and the mesometrium. There is some increase of connective tissue, yet the pathological change of the endometrium is more prominent, and to this the uterine hemorrhage may be due.

TABULAR RECORD OF CASES.

P. N. & Age	N.	Mar.	Abort.	R.	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
1 52 W 512	15	3 times, 2 children	No	15	4-5 days	Regular up to 6 years ago	Could not tell	Little	Fundus normal in ante- position, slightly en- larged.	Menorrhagia and metrorrhagia	D. and C. 10, 7 Vaginal hysterectomy 25, 7, '01	Polypoid endometrium	Recovery	She had a severe attack of grippe 6 years ago since then this trouble began.
2 38 W 514	14½	1½ yrs. 2 children	No	14½	5 days	Regular and moderate	Since 3 wks. bleeding	None	Fundus considerably enlarged, rather firm feeling in anteposi- tion and antelexion.	Menorrhagia	D. and C. 3, 8, '01	Dilated capillaries, otherwise normal	Improved	Cured once before, then after worse.
3 34 W 500	11	Not	No	11	4-5 days	Irregular	Could not tell	None	Nothing particular.	Menorrhagia and metrorrhagia	D. and C. 8, 6, '02	Normal	Improved	No pain at period.
4 17 W 504	16	Not	No	16	6-7 days	Irregular	3 months ago	W. D.	Virginal size of uterus in anteposition freely movable; ovaries nor- mal.	Menorrhagia, pain in left side	D. and C. 10, 6, '02	Normal	Recovery	
5 47 W 620	14	22 years 2 children	No	14	4 days	Regular and moderate	Could not tell	W. thick D. N. I.	No special condition in pelvic organs.	Metrorrhagia	D. and C. 12, 11, '02	Hypertrophy of glands	Recovery	For 5 years she was taking morphia in powder almost every day, during the last summer has been taking less.
6 45 W 623									Fundus normal size and consistency in retroposition; lateral structures freely movable.	Metrorrhagia	D. and C. 13, 11, '02	Normal	Improved	Only a very small amount of tissue ob- tained, in no way commensurate with the bleeding.
7 67 W 7179	14	3 children	1	14	4-4 days	Regular	Menopause between 40-50	None till lately	Uterus in retro-position, adherent	Bleeding from uterus	D. and C. 5, 1, '04	Polypoid endometrium	Recovery	For 3 years a little bleeding from the vagina which was stopped once by a doctor, then bleed- ing came again.
8 49 W 7188	13	20 years 5 children	2	13	5-7 days	Regular	Could not tell	W. D. for 10 yrs., worse after menstrues	Uterus enlarged, very soft cervix.	Metrorrhagia	D. and C. 13, 1, '04	Polypoid endometrium	Recovery	One child was delivered with forceps, follow- ed with fever, epi- leptic fit, she has had since childhood.

P. N. Age	N.	Mar.	Abort.	M.	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
9 29 7256	W	no children	1 3 yrs. ago	13	7 days	Regular, pain before flow starts	1 week before	Y. D. ever since P. I.	Uterus normal size in anteflexion, cervix lacerated and en- larged.	Menorrhagia	D. and C. 6, 2, '04	Normal	Improved	She was very sick with fever in bed 5 weeks after abortion.
10 53 7240	W	5 children	No	12	5 days	Regular	4 weeks ago	None	Uterus slightly en- larged in midposition appendages normal.	Bleeding from uterus	D. and C. 30, 1, '04	Normal		Menses irregular for 3 years, color bright red, no clots, no odor.
11 30 7274	W	Not	No						Nonmarital outlet, uterus small in ante- flexion, ovaries nor- mal size, movable.	Metrorrhagia	D. and C. 18, 2, '04	Normal	Improved	An unusual amount of endometrium was obtained. She had typhoid fever in the last summer, for 4 months.
12 27 7300	W	Yes	1 5 months ago	14	5-7 days	Irregular at onset	Could not tell	None	Uterus normal size in anteflexion, ovaries normal size, movable	Menorrhagia	D. and C. 3, 3, '04	Hypertrophy of glands	Improved	One month after the abortion, period be- gan, bled for 20 days
13 37 7335	W	Twice, 3 children	No	14	5-6 days	Regular till 4 or 5 months ago	21, 2-1, 3	Some	Uterus in anteflexion, normal size, consid- erable relaxation of outlet. Ovaries Nor- mal.	Menorrhagia and metrorrhagia	D. and C. 10, 3, '04	Normal	Recovery	No pain at all, but weakness from the loss of blood.
14 16 7367	W	Not	No	14	5-6 days	Irregular	Could not tell	None	Uterus large for age, soft irregular cervix, virginal hymen.	Uterine hemorrhage	D. and C. 28, 3, '04	Hypertrophy of glands	Recovery	Cysts of the character of corpora lutea in either pole of the left ovary and in the outer pole of the right.
15 28 7272	W	5 years	4	13	7 days	Regular	26, 1, '04	Profuse W. D. for 10 yrs.	Pelvic organs appa- rently normal.	Menorrhagia	D. and C. 10, 2, '04	Normal	Improved	Hemoglobin 25 % Heart systolic mur- mur.
16 28 7408	W	6 years 2 children	The last on Sept. '03	13	6-8 days	Irregular	8, '03	W. D. since the last child May, '03	Cervix bilaterally lac- erated, uterus other- wise apparently nor- mal.	Metrorrhagia	D. and C. 11, 4, '04	Normal	Improved	Last summer, malaria.
17 31 7515	W	14 years 6 children	1 April '03	14	8-10 days	Irregular	Could not tell	W. D. for 7 years	Uterus slightly enlarge- d in anteposition, appendages normal.	Menorrhagia for 6 years	D. and C.	Normal	Recovery	

P. N.	N.	Mar.	Abort.	W.	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus	Complaint	Operation.	Cond. of End.	Result.	Remarks.
18	30 W 7:12	6 years None	No	14	4-5 days	Regular	5, 6-11, 6	y. d.	Cervix feels normal, uterus in ante flexion movement somewhat restricted.	Menorrhagia	D. and C. 3, 7, '04	Normal	Recovery	In June 23d, 1902 she was operated for extrauterine pregnancy. Salpingo-oophorectomy. (R)
19	30 W 7:00	6 years 2 children	2	13	5-7 days	Regular	Could not tell	None	Uterus in ante flexion, freely movable.	Menorrhagia since 9 mths.	D. and C. 29, 6, '04	Cervical catarrh and hypertrophy of cervix	Recovery	Nowhere squamous epithelium visible, enormously dilated glands and turned capillaries, presenting the typical picture of a granulating surface.
20	30 W 7:02	16 years 1 child	No	12	4-5 days	Regular	11, 5, '04	Profuse for last 2 yrs.	Uterus in ante flexion.	Menorrhagia	D. and C. 11, 7, '04	Subacute endom.	Recovery	
21	32 W 7:08	14 years 5 children	1 3 months ago	13	5 days	Regular	Could not tell	None	Uterus in ante flexion, slightly enlarged, no tenderness, no mass.	Uterine hemorrhage since 3 mths. with a few intermissions	D. and C. 11, 8, '04	Normal	Recovery	She had pains like labor-pains and passed a small piece of flesh, and bleeding, worse since.
22	35 W 7:01	13 years 6 children	1	14	4-6 days	Regular since marriage	8 days before admission	None	Uterus slightly enlarged in normal ante flexion.	Menorrhagia	D. and C. 17, 8, '04	Normal but granular structure is rather rare	Recovery	
23	30 W 7:44	7 years 1 child	No	4	6 days	Regular	Regular	Some for 3-4 years	Uterus very low in the pelvis, otherwise apparently normal.	Menorrhagia	D. and C. Ventral suspension 17, 9, '04	Normal	Improved	She was operated before fixation of R. Kidney. 21 D. and C.
24	41 W 7:53	24 years 2 children	No	15	3-4 days	Regular	Could not tell	None	Uterus about normal size in ante flexion, somewhat low down than normal in pelvis	Menorrhagia	D. and C. hysterectomy, salpingo-oophorectomy, cholecystostomy. 12, 10, '04		Recovery	
25	41 W 7:23	1	1	13	3-4 days	Regular to 4 yrs ago	About 15, 9, '04	None	The body of uterus twice normal size in ante flexion, freely movable.	Menorrhagia	D. and C. 10, '04	Subacute endom.	Improved	Had one week in bed from rheumatism, malaria several times

P. N. $\frac{2}{2}$	N. $\frac{2}{2}$	Mar.	Abort.	W	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
26	28	W 8 years 5 children	No	13	7-8 days	Regular	Since June continual bleeding	None	Apparently normal.	Metrorrhagia	D. and C. 16, 11, '04 partial hysterectomy. 22, 11, '05	Dilatation of gland and partial hysterectomy.	Recovery	
27	64	W 48 years 8 children	No				Menopause at 51 years	Very little	Pelvic organs felt fairly normal.	Uterine hemorrhage	D. and C. excision piece of cervix	Normal	Recovery	On the posterior lip, there was a suspicious looking process. Therefore a part was excised for micro- scopical examination
28	38	W 6 years 2 children	1 4 yrs ago	4	5 days	Regular until 2 years ago		Some since abortion	Uterus in retroposition, somewhat adherent, both tubes and ovaries thickened and adherent.	Metrorrhagia	D. and C. 8, 12, '04	Hypertrophy of glands	Improved	A marked maculo-papular eruption upon buttocks, legs and arms. There are few old circular scars in legs, very suggestive of lues.
29	16	W Not	No	14	2 days	Irregular	8, 9, '04	Little	Apparently normal.	Menorrhagia	D. and C. 13, 12, '04	Polypoid endometrium	Recovery	She had already been operated twice with only a temporary relief.
30	35	W 2 children		16	4 days	Regular		None	Uterus in ante-position, slightly enlarged, no masses in either side.	Uterine hemorrhage	D. and C. 3, 1, '05	Normal	Recovery	Patient missed the period in June, and in July there came suddenly a bleeding. She was cured by this must be an abortion.
31	30	W Not	No	at 9 but ceased till 14	Irregular till 17, then regular up to P. I		Could not tell	None	Uterus in ante-position, normal size, appendages normal.	Menorrhagia	D. and C. 12, 1, '05	Normal	Recovery	Patient had an operation of appendectomy 14 years ago. P. I. started after this operation.
32	47	W 8 children		15	4-5 days	Regular	2 months ago		Fundus is about twice the normal size, cervix looks somewhat suspicious.	Menorrhagia	D. and C. 18, 1, '05	Normal endometrium erosion in cervix	Improved	Squamous epithelium proliferated, having a marked infiltration. In some part, the epithelium were destroyed, but not from handling, while in another place it was replaced with cylindrical epithelium.

P. N.	N.	Mar.	Age	Regul.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
33	28 W 8127	5 years 2 children	2	Regular up to P. L.	12, 1	Thick y. d.	No examination made.	Menorrhagia	D. and C. 18, 1, '05	Normal	Improved	A large amount of curetings obtained and very free hemor- rhage.
34	28 W 8129	1 year none		Regular	Could not tell		Uterus somewhat en- larged.	Menorrhagia	D. and C. 18, 1, '05	Normal	Un- improved	Previous admission for removal of a small fibroid.
35	28 B 8144	1 year 1 child	4 5	Regular at onset	11, 12, '04	Some	Fundus large, rather low in pelvis, outlet considerably re- laxed.	Menorrhagia	D. and C. 23, 1, '05 amputation of cer- vix colporrhaphia and et. pos.	Chr. inflam- mation of cer- vical mucous membrane	Recovery	Squamous epithelium disappeared, shows a typical granulation tissue; a gland lined with cylindrical epi- thelium is visible between squamous epithelium.
36	29 W 817	18 years 10 children	1	Regular up to the last May	22, 1		Uterus somewhat en- larged, otherwise nor- mal.	Menorrhagia	D. and C. 30, 1, '05	Normal	Improved	On 9th January 1905, she had exploratory laparotomy.
37	30 W 8201	6 years 1 child		Regular	7, 1, '05	Some	Uterus slightly en- larged, lateral struc- tures normal.	Menorrhagia	D. and C. 6, 2, '05	Normal	Recovery	Pneumonia 3 times in the last 2 years.
38	28 W 8271	6 years 5 children	1 15th	Regular	12, 16, '04		Uterus in retroposition apparently adherent.	Uterine hemorrhage	D. and C. 25, 2, '05	Normal	Improved	Patient is suffering from incipient pul- monary tuberculosis.
39	27 W 8450	26 years 7 children	1 5 yrs ago	Regular till up 4 yrs ago	4 weeks before	Some	Nothing found to ac- count for the bleed- ing.	Menorrhagia	D. and C. 29, 3, '05	Chr. endom- (slight)	Recovery	She had 2 operations before; 1. D. and C. amput. of cervix and R. R. V. O. 2. Exploratory lapa- rotomy.
40	29 W 8522	34 years 2 children	1	Regular	10, 3, '05		Fundus in marked re- troposition, adnexa normal.	Menorrhagia	D. and C. 10, 4, '05 Ventral suspension and appendec- tomy. 17, 4, '05	Slight chr. endom.	Recovery	She had:— 1. Scarlet fever in childhood. 2. Acute rheumatic fever at 15. 3. Typhoid fever 2 years ago.
41	26 W 8562	Not No	No	Irregular	5 weeks ago	Some	Pelvic organs appa- rently normal.	Menorrhagia	D. and C. 24, 4, '05	Polypoid endometrium	Im- proved	She had an operation before. D. and C. for metrorrhagia.

P. N.	N.	Mar.	Abort.	Next	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
42	20 W	2 years No children	No	13	4-5 days	Regular	5 weeks ago		Fundus in ante-position not enlarged, left ovary slightly enlarged.	Metrorrhagia	D. and C. 29, 4, '05	Chr. endom.	Recovery	
43	29 W	10 years 2 children	No	12	4-5 days	Regular	10, 3, '05		Fundus slightly enlarged apparently adherent tube and ovary in left side.	Uterine hemorrhage since 10, 3	D. and C. 13, 5, '05	Slight chr. endom.	Recovery	Chr. obliterative appendicitis.
44	24 W	7 years 1 child	No	14	7 days	Irregular till 4	6 weeks ago	Some	Fundus enlarged, size of 2 months pregnancy in retro-position.	Metrorrhagia since 6 wks	D. and C. 5, 8, '05 D. and C. salpingotomy (R) 26, 8	Normal	Recovery	This was extrauterine pregnancy (unruptured).
45	33 W	Yes	1 20, 4, '05	17	4-5 days	Regular	January		Fundus normal in retro-position, no tenderness laterally.	Metrorrhagia	D. and C. 2, 8, '05	Normal	Recovery	She had D. and C. in 11, 5, '05, about 51 of placental tissue was removed.
46	55 W	33 years 3 children	No	16	5-7 days	Regular	Menopause at 50		Fundus slightly enlarged in mid-position slight thickening of the left parametrium	Metrorrhagia	D. and C. Excision of cervix 31, 8, '05	Chr. cervical catarrh	Recovery	Pneumonia at 45, an attack of grippe in January, '05.
47	19 W	6 months	No	17	Very profuse	Irregular	Could not tell	Slight	Uterus in retro-position both ovaries enlarged.	Metrorrhagia	D. and C. Ventral suspension ovariectomy (R) 30, 8, '05	Normal	Recovery	Fibrous capsule was markedly thickened and seemed cystic.
48	23 W	1 child 21, 2, '03	1	16	7 days	Since 17 regular	18, 8, '04	Considerable W. Y. I.	Uterus in ante-position; appendages normal, cervix torn.	Metrorrhagia	D. and C. 30, 9, '05	Normal	Recovery	Patients dates onset of this trouble with the birth of child.
49	37 W	20 years 8 children	5	12½	5-5 days	Regular	3, 9, '05	w. y. d.	Uterus low down, fundus in retro-position adnexa not made out	Menorrhagia	Hysterectomy 21, 9, '05	Hypertrophy of glands	Recovery	
50	44 W	2½ yrs. 6 children	No	13	3 days	Regular till P. I.	16, 9, '05		Uterus slightly enlarged in ante-position cervix somewhat large and soft.	Metrorrhagia	D. and C. 5, 10 '05	Polypoid endometrium	Recovery	She had a severe attack of dysentery in 19, 4, '05.

P. N. N.	Mar.	Abort.	W.	Days.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
3 8127	W 5 years 2 children	2	14	4 days	Regular up to P. L.	12, 1	Thick y. d.	No examination made.	Menorrhagia	D. and C. 18, 1, '05	Normal	Improved	A large amount of curetings obtained and very free hemor- rhage.
34 8126	W 10 years 1 child	1	13	4 days	Regular	Could not tell	Uterus somewhat en- larged.	Uterus somewhat en- larged.	Menorrhagia	D. and C. 18, 1, '05	Normal	Un- improved	Previous admission for removal of a small fibroid.
35 8140	B 10 years 1 child	4-5	16	4-4 days	Regular at onset	31, 12, '04	Some	Fundus large, rather low in pelvis, outlet considerably re- laxed.	Menorrhagia	D. and C. 23, '05	Chr. inflam- mation of cer- vix and vaginal membrane	Recovery	Squamous epithelium disappeared shows a typical granulation tissue; a gland lined with cylindrical epi- thelium is visible between squamous epithelium.
36 8171	W 18 years 1 child	1	15	5 days	Regular up to the last May	22, 1	Uterus somewhat en- larged, otherwise nor- mal.	Uterus somewhat en- larged, otherwise nor- mal.	Menorrhagia	D. and C. 30, 1, '05	Normal	Improved	On 9th January 1905, she had exploratory laparotomy.
37 8201	W 6 years 1 child	12	12	6 days	Regular	7, 1, '05	Some	Uterus slightly en- larged, lateral struc- tures normal.	Menorrhagia	D. and C. 6, 2, '05	Normal	Recovery	Pneumonia 3 times in the last 2 years.
38 8279	W 6 years 1 child	1	16	3-5 days	Regular	12, 10, '04	Some	Uterus in retroposition apparently adherent.	Uterine hemorrhage	D. and C. 25, 2, '05	Normal	Improved	Patient is suffering from incipient pul- monary tuberculosis.
39 8450	W 20 years 7 children	1	14	2-3 days	Regular till up to yes. 1900	4 weeks before	Some	Nothing found to ac- count for the bleed- ing.	Menorrhagia	D. and C. 29, 3, '05	Chr. endom. (slight)	Recovery	She had 2 operations before: 1. D. and C. amput. of cervix and R. R. V. O. 2. Exploratory lapa- rotomy.
40 8522	W 24 years 2 children	1	15	1-5 days	Regular	10, 3, '05	Some	Fundus in marked re- tro-position, adnexa normal.	Menorrhagia	D. and C. 10, 4, '05	Slight chr. endom.	Recovery	She had:— 1. Scarlet fever in childhood. 2. Acute rheumatic fever at 15. 3. Typhoid fever 2 years ago.
41 8562	W 16 years	Not	14	3 days	Irregular	3 weeks ago	Some	Pelvic organs appa- rently normal.	Menorrhagia	D. and C. 24, 4, '05	Polyoid endometrium	Improved	She had an operation before. D. and C. for metrorrhagia.

P. N.	N.	Mar.	Abort.	R.	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
42	20	W 2 years 8570	No	13	4-5 days	Regular	5 weeks ago		Fundus in ante-position not enlarged, left ovary slightly enlarged.	Metrorrhagia	D. and C. 29, 4, '05	Chr. endom.	Recovery	
43	29	W 10 years 8614	No	12	4-5 days	Regular	10, 3, '05		Fundus slightly enlarged apparently adherent tube and ovary in left side.	Uterine hemorrhage since 10, 3	D. and C. appinectomy 13, 5, '05	Slight chr. endom.	Recovery	Chr. obliterative appendicitis.
44	24	W 7 years 8878	No	14	7 days	Irregular till 4	6 weeks ago	Some	Fundus enlarged, size of 2 months pregnancy in retro-position.	Metrorrhagia since 6 wks.	D. and C. 5, 8, '05 D. and C. salpingotomy (R) 26, 8	Normal	Recovery	This was extrauterine pregnancy (unruptured).
45	33	W Yes 8871	1 20, 4, '05	17	4-5 days	Regular	January		Fundus normal in retro-position, no tenderness laterally.	Metrorrhagia	D. and C. 2, 8, '05	Normal	Recovery	She had D. and C. in 11, 5, '05, about 51 of placental tissue was removed.
46	55	W 33 years 8924	No	16	5-7 days	Regular	Menopause at 58		Fundus slightly enlarged in mid-position, slight thickening of the left parametrium.	Metrorrhagia	D. and C. Excision of cervix 31, 8, '05	Chr. cervical catarrh	Recovery	Pneumonia at 45, an attack of grippe in January, '05.
47	19	W 6 months 8921	No	17	Very profuse	Irregular	Could not tell	Slight	Uterus in retro-position both ovaries enlarged.	Metrorrhagia	D. and C. Ventral suspension ovariectomy (R) 30, 8, '05	Normal	Recovery	Fibrous capsule was markedly thickened and seemed cystic.
48	23	W 1 child 9006	1 28, 2, '03	16	7 days	Since 17 regular	18, 8, '04	Considerable W. Y. 1).	Uterus in ante-position appendages normal, cervix torn.	Metrorrhagia	D. and C. 30, 9, '05	Normal	Recovery	Patients dates onset of this trouble with the birth of child.
49	37	W 20 years 9018	5	12½	5-5 days	Regular	3, 9, '05	w. y. d.	Uterus low down, fundus in retro-position adnexa not made out	Menorrhagia	Hysterectomy 21, 9, '05	Hypertrophy of glands	Recovery	
50	44	W 24½ yrs. 9009	No	13	3 days	Regular till P. I.	16, 9, '05		Uterus slightly enlarged in ante-position cervix somewhat large and soft.	Metrorrhagia	D. and C. 5, 10 '05	Polypoid endometrium	Recovery	She had a severe attack of dysentery in 19, 4, '05.

P. N.	Mar.	Abort.	Menstr.	Dura.	Regular.	L. M.	Leuco.	Convl. of Uterus.	Complaint.	Operation.	Convl. of End.	Result.	Remarks.
60 33 W 9239	11 years 4 children	No	13	4 days	Regular	3 weeks ago		Uterus in ante-position; normal size; left ovary slightly enlarged and cystic.	Metrorrhagia	D. and C. 26, 4, '06	Normal	Improved	When bleeding commenced, patient used to have severe pain in back and left side, which lasted 24 hrs.
61 23 W 9759	3 years	No	14	6-7 days	Irregular	Could not tell	Some	Fundus in mid-position, right ovary cystic and slightly enlarged	Metrorrhagia	D. and C. 1, 5, '06	Polyoid endometrium	Recovery	Her father died of stomach-cancer.
62 43 W 9283	25 years 1 child	1 18 years ago	10	6-7 days	Irregular since 6-7 years	6, 4, '06		Fundus in mid-position on posterior surface of uterus, there is a metrorrhagia fibroid.	Menorrhagia and	D. and C. 2, 5, '06	Hypertrophy of glands	Recovery	
64 35 W 9819	6 years 4 children	No	14	6 days	Regular till P. I.	3 weeks ago	Profuse	Uterus and appendages apparently normal	Menorrhagia	D. and C. 12, 5, '06	Normal	Recovery	1. Malaria when 25 years of age. 2. Pneumonia 4 months ago; had empyema following and sinus persists.
64 48 W 9823	27 years 10 children	No	18	4-5 days	Regular	5 months ago	Considerable	Fundus in retro-position, not enlarged.	Metrorrhagia	D. and C. amput. of cervix R. R. V. O. 19, 5, '06	Normal hypertrophy of cervix	Recovery	She missed 2 periods previous to onset of the bleeding, there was some suspicion of abortion.
65 52 W 9929	30 years 7 children	1 14 years ago	14	6-7 days	Regular	1 week ago		Fundus in mid-position, slightly enlarged, cystocele and rectocele.	Menorrhagia	D. and C. R. R. V. O. 10, 6, '06	Normal	Recovery	Since 4 years, she used to call doctor in her period, as she was unable to check the profuse bleeding.
66 20 W 9970	6 years, 1 child	1, last one 3 months ago	13	10 days	Irregular	1 month ago	Some	Fundus in ante-position, not enlarged, both ovaries normal	Menorrhagia and metrorrhagia	D. and C. 29, 6, '06	Slight chr. enflom.	Improved	Patient had D. and C. twice before.
67 13 W 9863	11 years, 4 children	No	13	4 days	Regular	Could not tell	None	Pelvic organs normal	Metrorrhagia	D. and C. 23, 5, '06	Normal	Recovery	She is the same patient who was mentioned in No. 60.
68 16 M 10083	6 months	No	14	6 days	Irregular	11, 5, '06	Profuse for last 2 weeks	Uterus small in ante-position, left ovary slightly enlarged.	Menorrhagia	D. and C. 14, 7, '06	Normal	Improved	

P. N.	N.	M.	Mar.	Abert.	W.	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
69	32 B	15 years, 1 child	1008	No	13	2-3 days	Irregular	15, 6, '06	No	Uterus in descensus slightly larger than normal.	Menorrhagia	D. and C. amput. of cervix R. R. V. O. 14, 7, '06	Normal	Recovery	
70	32 W	12 years, 1 child	1008	1 9 years ago	13	5-7 days	Regular	10, 7, '06	Some	Fundus in retroposition apparently normal pelvis.	Metrorrhagia	D. and C. 18, 7, '06	Normal	Recovery	
71	34 W	8 years, 1 child	1024	1 2 years ago	15	3-6 days	Irregular	16, 6, '06	Some for 5 years	Fundus in retroposition, ovaries normal.	Metrorrhagia	D. and C. amput. of cervix R. R. V. O.	Unusual ap. appearance of cervix and normal endometrium.	Recovery	Patient was operated 5 years ago. 1. Ventral suspension. 2. Appendectomy. Very thickened squamous epithelium covers mostly the specimen. Where the epithelium was stripped away, shows an unusual structure of gland. See page 338 in book "Cancer of the Uterus."
72	19 W	Single	1012	No	15 1/2	4-5 days	Regular	3 days ago	Some, since one month	Pelvic organs normal.	Menorrhagia	D. and C. 1, 8, '06	Hypertrophy of glands	Recovery	
73	25 W	3 years, last one, 16, 5, '02	1016	2 last one, 16, 5, '02	12	1-5 days	Irregular	16, 6, '06	Some	Fundus in anteposition no masses laterally, cervix somewhat enlarged.	Metrorrhagia	D. and C. amput. of cervix, suspension of uterus, incision of abscess	Erosion of cervix	Recovery	Invading proliferation of squamous epithelium, and marked by a marked infiltration. In one place, epithelium was destroyed. Very suspicious cervix.
74	25 W	5 years, 2 children	1024	1 8 weeks ago	15	6 days	Regular	3 months ago	Some	Uterus in mid-position, somewhat enlarged	Metrorrhagia	D. and C. 29, 8, '06	Normal	Recovery	
75	32 W	10 years, 5 children	1062	No	18	7 days	Regular	2 years ago	Some	Uterus small in ante position, appendages normal.	Metrorrhagia	D. and C. R. R. V. O. 13, 12, '06	Normal	Recovery	The last labor 10 months ago.

P. N.	N.	Mar.	Abet.	Wks.	Days	Regular	L. M.	Leuco.	Cond. of Uterus	Complaint	Operation	Cond. of End.	Result	Remarks
76	28	W	2 years no children	14	7 days	Irregular	July, '06		Uterus almost of infantile type, in ante-position, lateral structures normal	Metrorrhagia	D. and C. 19, 12, '06	Normal	Recovery	
77	25	B	2 years 2 children	8	2-3 days	Irregular	1, 12, '06	Some for 6 months	Uterus firm and normal, both ovaries examined, shaggy, cellular, adhesions	Metrorrhagia	D. and C. exploratory laparotomy, incision of cystic ovary	Normal	Recovery	
78	29	W	8 years 3 children	13	4-5 days	Regular till P. I.	20, 10, '06		Uterus in retroposition, normal size, 3 marked cystocele	Menorrhagia	D. and C. 8, 11, '06	Normal	Improved	
79	22	B	4 years 2 children	16	3-4 days	Regular till 5, '06	5, '06		Uterus enlarged to about twice the normal size in ante-position	Metrorrhagia	D. and C. 17, 1, '07	Chr. end-m. and hypertrophy of glands	Recovery	Patient inserted a bougie into womb to induce the abortion, for she thought she was about 2 months pregnant.
80	33	W	10 years 2 children	13	6 days	Regular	7 days ago	Profuse for 5 yrs.	Uterus in mid-position, no masses laterally	Menorrhagia	D. and C. 28, 7, '06	Normal	Recovery	Patient had an operation salpingo-oophorectomy (L), 10, 9, '03.
81	49	W	Widowed for 4 years 2 children	12	5-6 days	Regular	Menopause 11 yrs ago	A little	Pelvic organs normal	Metrorrhagia	D. and C. excision of cervix 20, 12, '06	Normal end-m. and normal cervix	Recovery	Patient was operated for adenocystoma in spring, 1894.
82	17	W	Not	13	7-10 days	Irregular for 2 years	Could not tell	Considerable	Hymen intact, uterus in ante-position, adnexa normal	Menorrhagia and metrorrhagia	D. and C. appendectomy 23, 2, '07	Acute endometritis	Recovery	Hysterol. Monagnoli in right side
83	45	W							Cervix shows a good result of the last operation	Metrorrhagia	D. and C. 23, 2, '07	Normal	Recovery	She had an operation 26, 1, '05, amput. of cervix, endometrioid and R. R. V. O
84	28	W	6 years 3 children	14	7-8 days	Irregular some dysmenorrhea	14, 12, '06		Outlet moderately relaxed, uterus in ante-position, normal size	Metrorrhagia	D. and C. 20, 2, '07	Normal	Recovery	General symptoms of anemia

P. N. & Age	N. Mar.	Age	W.	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
85, 24 W 106, 2	5 years 2 children	1 month ago	15	3 days	Some dys- menorrhea	2, 2, '07	A little	Uterus in mid-position a little enlarged, somewhat softened, alveola normal.	Metrorrhagia	D. and C. 28, 2, '07	Normal	Recovery	General disturbances.
86, 31 W 111, 7	14 years 10 children	6 wks. ago.	17	3-4 days	Regular	17, 12, '06	Slight	Outlet much relaxed, uterus in ante-posi- tion, 2 tiny cervical polypi.	Metrorrhagia	D. and C. 10, 4, '07	Hypertrophy of glands and hemorrhage	Recovery	
87, 28 W 123, 8	4 years 10 child	No	2 weeks	Irregular	Irregular	Could not tell	None	Normal pelvic organs.	Metrorrhagia	Hysterotomy (vaginal) caten- ization of uterine cavity	Polypoid endom.	Recovery	She had already twice D. and C. in the last 2 years for uterine hemorrhage.
88, 31 W 111, 8	Widowed for 6 yrs	No	14	4-5 days	Regular	22, 3, '07	None	Fundus enlarged about twice the normal size.	Metrorrhagia	D. and C. hysterotomy with some resection	Chr. endom.	Recovery	
89, 31 W 122, 3	4 years 11 months	1, 11, '06	15	7-8 days	Regular	30, 4, '07	Slight	Pelvic organs normal.	Metrorrhagia	D. and C. 6, 5, '07	Normal	Recovery	
90, 29 W 113, 6	Twice 2 children	3	16	4 days	Regular	3 weeks ago	Slight	Pelvic organs normal.	Metrorrhagia	D. and C. 1, 6, '07	Normal	Recovery	
91, 26 W 113, 1	1 child	None	5 days	Regular	Regular	3, 6, '07	Slight	Uterus in retro-position, cervix large, cystic, being indurated.	Metrorrhagia	D. and C. amputation of cervix R. W. O. appendectomy 20, 6	Normal	Recovery	
92, 26 W 113, 8	6 years, 1 child	No	14	3 days	Regular, slight pain	11 weeks ago since last child	Some since 6 months	Cervix slightly en- larged, otherwise nor- mal.	Metrorrhagia since last child	D. and C. 12, 7, '07	Normal	Recovery	
93, 26 W 113, 8	4 years 6 children	No	12	4 days	Irregular since January	10, 6, '07	Slight	Uterus slightly en- larged, right ovary cystic.	Metrorrhagia some pain in lower abdomen	D. and C. exploratory laparotomy 10, 7	Normal	Recovery	Malaria 10 years ago.
94, 24 W 113, 6	18 years, 5 children	1 yr. ago	13	7-15 days	Irregular	20, 7, '07	Slight	Uterus slightly en- larged and firm, otherwise normal pelvis.	Menorrhagia	D. and C. hysterotomy with some resection of fundus.	Chr. endom.	Recovery	

P. N.	Age	N.	Mar.	Abort.	K ¹⁸¹	Dura.	Regular.	L. M.	Leuco.	Cond. of Uterus.	Complaint.	Operation.	Cond. of End.	Result.	Remarks.
95 11078	31 W	15 years 4 children	1 last one 5 months ago.	None	12	3-4 days	Regular	23. 7. '07	None	Outlet relaxed, uterus slightly enlarged, cervical lip hyper- trophied.	Menorrhagia, some pain	D. and C. 10, 8, '07	Slight chr. endom.	Improved	Since an abortion four years ago, she feels very weak, easily ex- hausted.
96 11707	27 W	8 years	None	None	11	4-5 days	Irregular	Could not tell	Some	Pelvic organs normal, except that uterus is in retroposition.	Metrorrhagia	D. and C. 17, 8, '07	Hypertrophy of glands	Improved	Patient was operated before (11, and C.) for bleeding.
97 12026	41 W	10 years 1 child	None	None	13	3-4 days	Irregular for some several yrs.	Could not tell	Uterus slightly enlarged	Uterus enlarged, gradually becoming metrorrhagia	Menorrhagia	Hysterectomy 1, 11, '07	Adenomyoma	Recovery	At first, menorrhagia, was cured and im- proved for a year. Menorrhagia return- ed, gradually becom- ing a metrorrhagia.
98 12087	34 W	18 years 5 children	None	None	14	5-7 days	Irregular	2 weeks before admission	Some for 4-5 years	Freely movable fundus, enlarged, otherwise normal pelvis.	Metrorrhagia	Hysterectomy and resection of fundus 27, 11	Chr. endom.	Recovery	Malaria 2 years ago, otherwise there is nothing to be men- tioned.
99 12408	47 W	The history unknown, the whole uterus with its appendages was sent to the laboratory for its histological examination.													

P. N. — Pathological number.
N. — Nationality.
Mar. — Marriage.
Abort. — Abortion.
1st. M. — First menstruation.
Dura. — Duration.
Regul. — Regular.

EXPLANATION OF THE ABBREVIATIONS.

L. m. — Last menstruation.
Leuko. — Leukorrhœa.
w. d. — White discharge.
w. y. d. — White, yellowish discharge.
W. — White people.
B. — Colored people.

M. — Mixed.
D. & C. — Dilatation and curettage.
R. R. V. O. — Repair of relaxed vaginal outlet.
Wk. — Week.
Wks. — Weeks.
Endom. — Endometritis.

Path. No. 11468.—Case No. 99.

Gross Description of Specimen.—Specimen consists of a uterus together with tubes and ovaries and the cervix entirely removed. The uterus is enlarged to about twice its normal size and there is a small myomatous nodule in the right half just under the peritoneum but not exactly subserous. The peritoneal surfaces are everywhere smooth and glistening, although the peritoneum appears to be somewhat thickened. The uterus presents a rough and shaggy appearance laterally where the broad ligaments have been detached. The uterus has been opened along its anterior surface. It measures $13.5 \times 10 \times 4.5$ cm. The uterine cavity measures 10 cm. in length. The mucous membrane is thrown into folds and is of a dark purplish color in the body of the uterus. The cervix is hypertrophied and lacerated; feels hard; presents no nodules. The cervical mucous membrane, however, does not extend out into the vaginal portion of the cervix. There is a narrow vaginal cuff attached. The right tube is convoluted and nodular in appearance and is somewhat thickened. It measures 8 cm. in length. The right ovary is normal in appearance and small, measures $2.5 \times 2.5 \times 1$ cm. The left tube is also thickened and convoluted but not distended. It measures approximately 7 cm. in length. The left ovary measures $4 \times 2.5 \times 1$ cm. and contains a corpus luteum on its free edge. On section it presents a normal appearance except for one small cyst about 1 cm. in diameter which contains a gelatinous looking material. The right ovary on section also contains a cyst filled with a gelatinous looking substance, otherwise it appears sclerotic. The uterine wall measures 3 cm. There is no visible evidence of malignancy.

Microscopical Examination.—Specimen from fundus shows microscopically two places which were stained deeply with hematoxylin; one is apparently a small fibroid nodule which is situated very near the serosa, and the other is also apparently a small part of endometrium attached to this specimen. Besides this picture there are several cross-sections of blood-vessels, the thickening of whose walls can be easily recognized even with the naked eye. Under the microscope unstriped muscle bundles are interlaced in several directions as in the normal uterine wall, which deserves no further mention. However, as a striking condition in the mesometrium, there are some small round cells scattered throughout, especially between the muscle bundles, more marked nearer the mucous membrane. The small fibroid nodule stained very deeply with hematoxylin, is well encapsulated as a whole with circularly running fibrous tissue. The attached endometrium varies in thickness, and only a few parts preserve the intact surface epithelium, which might be the result of handling. Uterine glands are cut partly transversely, mostly in an oblique or longitudinal direction with the normal looking cylindrical epithelium in one layer; some of them contain a mucous substance or blood cells. The glandular struc-

tures are abundant, so that the stroma between each gland is much narrowed like a stem, and the majority of the glands show evident convolution. In cross-section the glands appear somewhat dilated. There is also one suspicious place which reminds one of adenomyoma from the fact that there are several glands which stand as islands entirely apart from the endometrium. Of course there is some irregularity in the boundary between endometrium and mesometrium, still it looks quite different from the ordinary structure. On this account one would speak of this as the beginning of adenomyoma, as we acknowledge that the histogenesis of adenomyoma is usually from the endometrium, as T. S. Cullen finds in his abundant material. The stroma cells are generally very dense with round, oval nuclei accompanied by small, round-cell infiltration, while the vascularity itself is not marked as in a specimen of uterine hemorrhage. However, blood-vessels in the mesometrium, as is readily recognized with the naked eye, show a very much thickened vessel wall, the lumina of some being almost obliterated. In all vessels the endothelium is fairly well recognizable, and there are in some places two or three zones of staining according to the condition of intima, media, and adventitia. In the wall of one large blood-vessel there is an aggregation of nuclei which look like polymorphonuclear cells in their individual contour, while at the same time some degeneration is going on in the media. With Van Gieson's stain the fibroid nodule stains bright red. It is readily recognizable that the nodule is composed mostly of fibroid tissue. In the whole section the perimysium is stained red while the unstriped muscle fibers are yellow, and one might say that there is a slight increase of connective tissue on account of a little wider perimysium than normal.

Specimen from corpus: As a whole there appears about the same picture as the last specimen, the only difference being that the endometrium is apparently thickened (5-6 mm.) where the vascularity is prominent with many dilated capillaries.

Specimen from cervix: The cervical mucus membrane preserves its surface epithelium partly intact. Some of the cervical glands containing mucus are somewhat dilated, otherwise nothing worthy of mention. The mesometrium has the usual structure, the only remarkable feature being that there are many cross-sections of blood-vessels, which show considerable thickening of their walls, some of them being almost obliterated. The lumina of some of these blood-vessels contain blood and they show an intact endothelial lining, while the vessel wall shows two different zones where both intima and media stain pale red without the boundary between them, a condition which is readily recognizable as the beginning of hyaline degeneration. Van Gieson's stain gives a good contrast stain, the red and the yellow, by which one may notice a bundle of coarse connective tissue as the reticulum of a network. In

some of the vessel walls there is a faint stain with acid fuchsin which is likewise to be understood as the first stage of hyaline degeneration. Coming nearer to the portio vaginalis there is a marked increase of connective tissue and some degenerative process in the muscle substance.

Tubes, a slight chronic inflammation.

Ovaries: Right ovary shows several stages of corpus luteum and a retention cyst (1 cm.x6 mm.), and as a whole a slight chronic inflammation. Left ovary more fibrous, containing one corpus fibrosum.

Unfortunately I could not secure an exact history, but only one of obstinate uterine hemorrhage. An enlarged uterus having a small interstitial myomatous nodule, lengthened uterine cavity, obstinate uterine hemorrhage, and the patient's age are the cardinal symptoms of adenomyoma, although I hesitate to diagnose this specimen positively as adenomyoma from the preceding conditions. More or less of the connective tissue increase and some degeneration or thickening of the blood-vessel wall is due to the pathological condition, but mostly to the physiological processes at her age. The diffuse infiltration of small round cells in the mesometrium and the unusual condition of endometrium which looks very much like "uterus-gonorrhœ," which was described by Wertheim, must be the main causes for the obstinate uterine hemorrhage, possibly combined with other factors. After looking over nine cases (five cases beyond forty years, and four cases under forty years of age) in which the uterus was entirely extirpated or partially resected, I did not find any definite point common to all to which I could attribute the uterine hemorrhage in each case, as has been done by Reinicke, Theilhaber and others.

TREATMENT.

This was divided into two methods according to the cause of hemorrhage, whether there is general or local disturbance. Absolute rest in bed, good movement of the bowels, and light diet are necessary for every case. The treatment should be adapted according to the cause of hemorrhage, but as the general method for all cases of uterine hemorrhage we prefer the following:

1. Tampon (vaginal or intrauterine in the hurried cases).
2. Internal use of several preparations of ergot.
3. Local application of astringents (mineral or vegetable).
4. Curettage.

We must remember that there are some cases of obstinate bleeding which are relieved only temporarily by curettage, so that finally ligation of the uterine artery or hypogastric artery after Martin, or castration after Olshausen, were proposed in order to get more permanent results. It is not uncommon to perform total extirpation of the uterus. Of course this radical treatment will check the bleeding forever, but it is not an ideal method in any way. It is an obvious fact that correct diagnosis depends upon experience, and even the gynecologist who has had a great deal of experience frequently makes incorrect diagnosis. For instance a case may be examined under ether and nothing be made out in the pelvic organs, and a diagnosis may be made of normal uterus as well as normal appendages; but after exploratory laparotomy one sometimes finds a slight adhesion or cystic ovary or small fibroid nodule in the uterus, and after exploratory hysterotomy one sometimes discovers small interstitial myomata, adenomyomata, or polypi in the uterine cavity, though the uterus looks only like an enlarged organ. From a practical standpoint exploratory hysterotomy* followed by partial resection is comparatively much easier than the total extirpation; consequently the prognosis of the operation itself is not as serious, while it always gives great comfort to the patient to know that the entire uterus has not been removed. This is an ideal operation at the climacteric to check the persistent uterine hemorrhage after repeated curettage such as occurred in No. 9018, No. 9228, No. 11708, and No. 12087. The technic employed by Dr. H. A. Kelly is as follows: The uterus is drawn up through the abdominal wound (in the median line between the umbilicus and symphysis) and incised in the median line to the cavity, practically no hemorrhage resulting, since this is controlled by pressure on both sides. The uterus is carefully examined to find a reason for the hemorrhage. Then a wedge-shaped portion of the uterus on each side of the median line is resected. The incision extends down to the level of the internal os. The incision in the uterus is then closed with catgut sutures, entirely checking the hemorrhage. At the end of the operation the two cornua are in close approximation. To prevent pregnancy, if that be considered dangerous, both tubes may be ligated, thus practically removing all chances of fecundation. No matter what is the cause of the hemorrhage, whether it comes from "insufficiencia uteri" or "atheromatous change of the

* Much stress has been laid on the value of hysterotomy by Dr. W. W. Russell.

blood-vessels," the endometrium is always the source of bleeding, so with elimination of the area of bleeding by this operation, it is quite reasonable to expect a permanent result.

In closing I desire to again thank Professor H. A. Kelly for his encouragement and the privilege of using his library, and at the same time to thank also Associate Professor T. S. Cullen for his kind personal instruction. To all the staff of the Gynecological Department of the Johns Hopkins Hospital, and especially to Dr. D. B. Casler, I express my thanks for their kindness and their valuable suggestions. My thanks also to my friends, Dr. E. C. Cort, Dr. F. Hazelhurst, and Mr. W. E. Dandy, for their untiring efforts to revise my English.

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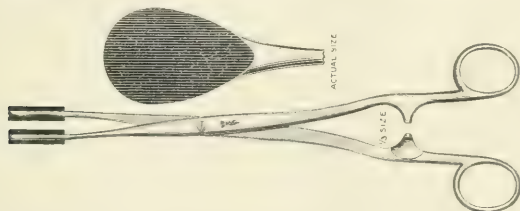
Meeting of March 10, 1908.

The President, EDWIN B. CRAGIN, M. D., in the Chair.

DR. CHARLES G. CHILD, JR., presented a

RUBBER-JAWED FORCEPS

for use in abdominal surgery. Into each jaw of a Foerster sponge holder was fitted a rubber pad one-quarter of an inch thick. With these forceps, a firm, yet elastic hold on the abdominal organs is possible, without danger of injury to the peritoneum or deeper structures. The intestines, appendix, and uterine adnexa are easily handled, and may, with facility, be drawn up to the abdominal wound and examined.



DR. FLINT.—I would like to ask if you can slip the rubber in any pair of forceps instead of having to buy a special instrument?

DR. CHILD.—Yes, the rubber pads can be fitted to the sponge-holder forceps of either the Foerster or Roosevelt Hospital model.

DR. BOLDT.—I have found that a cotton glove used over the rubber glove is about as good and more serviceable than anything that I know of. Of course, we all realize that rubber gloves in handling the serous covering of the intestines, are not desirable. It is possible the same thing might apply to this instrument. I believe that the cotton gloves would be found superior in most cases.

DR. GEORGE GRAY WARD, JR., reported a case of

PRIMARY EPITHELIOMA OF THE VAGINA IN A PATIENT UNDER TWENTY YEARS OF AGE.

The following case was referred to me by Dr. Best, of Port Jervis, N. Y., and was admitted to my service at the Post-Graduate Hospital on February 13, 1908.

The history was as follows: Edith P., was twenty years of age in January 21, 1908. Born in Orange county, N. Y. Has been married four years, but never pregnant. Menstruation is regular every twenty-eight days, duration three to four days and without pain. She has never had any illness or injury prior to this trouble, and her weight last summer was 170 pounds.

Her present illness dates from October, 1907, when she first noticed some vaginal discharge which was blood stained. Dyspareunia was also becoming marked. The discharge later became offensive and defecation was painful, and as she was losing weight and becoming debilitated, she consulted her family physician.

On examination she presented the appearance of a strongly built country girl but was somewhat pallid.

She stated that she had lost about twenty pounds in weight since October. There was no history whatsoever of syphilis or tuberculosis to be obtained. The family history was likewise negative. Her husband, who accompanied her to the hospital, was of poor physique and of a tubercular type, although he stated his health was fair at the present time.

Examination of the patient showed the heart, lungs and abdominal organs were normal. The external genitals were those of a nullipara and in a healthy condition. On inserting a retractor into the vagina and exposing the posterior wall, a rectangular area of deep ulceration was revealed which involved the whole of the vaginal wall from just in front of the cervix to the site of the hymen and extended half way up the lateral vaginal walls. The edges of the ulceration were sharply defined, as though cut with a knife, and were considerably infiltrated. The surface of the ulcer which was largely the exposed rectal wall was covered with grayish necrotic tissue with a foul odor. The inguinal glands were not involved and the deep pelvic glands could not be felt. Rectal examination showed that there was no perforation, but there was infiltration of the rectal wall.

The uterus, broad ligaments and appendages were perfectly normal to touch.

The cervix was normal with no evidence of laceration. The external os was slightly reddened.

The above examination was made under anesthesia and with every care, and curettings from the uterus and sections of the margins and base of the ulcer were removed and sent to Professor Brooks for microscopical examination.

A tentative diagnosis of primary cancer of the vagina was made and the case was considered inoperable. The sloughs were cleaned up with the cautery, and the vagina packed with iodoform gauze.

While waiting for the report of Dr. Brooks, and in view of the husband's physical condition, I had the tuberculin eye test applied through the kindness of Dr. Dunham, but it was negative.

Dr. Brooks reported the scrapings from the uterus as negative and the growth in the vagina as an epithelioma of the infiltrating type, which was primary.

As the case was inoperable and the prognosis so grave, I was anxious to try the effects of radium on the case and through the kindness of Dr. Morton, four tubes of radium, of 10 mg. each were used. The tubes were placed in line in the vagina against the posterior wall and the exposure was made for one hour.

Three exposures at two-day intervals were made, but at the present time no effect whatever has been observed except progression of the disease.

The present status of the case is of rapidly increasing emaciation and cachexia. Perforation of the rectum has occurred and the constant use of opiates is necessary to control the pain.

The early age of this patient when the disease began, nineteen years and eight months, is a point of great interest, as the cases are very rare where it is observed as early as twenty years. A case has been reported at fourteen and one at seventeen years. The cases that have been reported as occurring in early childhood and infancy were most surely sarcomatous.

The papillary form of epithelioma is the most frequent in the vagina, the infiltrating type being much less common.

We should have expected that the squamous epithelial type of cancer would have been the most favorable for the trial of radium, as it is in superficial skin cancers that the best results have been reported.

THE PRESIDENT.—There are a number of interesting points in this case. One is that it is apparently a primary infection of the vagina. Another, that it occurs in a woman only twenty years of age. Another, that radium has been used, apparently with little benefit.

DR. VINEBERG.—I had a case during the summer almost a fac simile of this—a young woman of twenty or twenty-one years had a growth of the vagina posteriorly. The cervix was not involved. The girl had lost a good deal in weight, although her general condition seemed to be good. She had no complaint excepting that she had a vaginal discharge and came to the dispensary for that. I have lost sight of her and I do not know how the case came out.

DR. EDGAR.—I wish to refer to a case of carcinoma of the body of the uterus treated by radium. I used radium faithfully for a period of three months. Dr. Kelly came on from Baltimore every two weeks, and watched the case with me. We could not see any effect from the radium except that it relieved the bladder symptoms, there being induration of the posterior bladder wall. It certainly seemed to diminish the pain in the bladder, but aside from this, it seemed to have no effect upon the progress of the uterine carcinoma and the patient died in the usual time. The radium that was used was imported especially for this case.

DR. BOLDT.—X-rays have been an absolute failure in all cases of carcinoma of the uterus that I have used them on.

DR. VINEBERG.—I have had benefit in a private case by simply cauterizing with the Pacquelin's lamp. A very advanced case of cervical carcinoma came to me for operation, and within a year there was a recurrence in the vagina. I cauterized it very thoroughly with the Pacquelin's lamp and relieved it for a time. She gets a little recurrence from time to time, but I have been able to carry her on for nearly two years, simply with the cauterization of the Pacquelin's lamp. She went to Europe last summer and she had a slight recurrence then. I gave her a letter to some one in Berlin, telling the condition and what I had done for it. She got into Dr. Landau's hands and he cauterized her with zinc chloride and burned her a great deal, but it did no good. When she returned, the growth was larger than ever. I used the Pacquelin again very thoroughly and the growth has been checked and I feel confident if the Pacquelin had not been used, she would not be living to-day.

DR. BROTHERS.—I personally believe that primary carcinoma of the vagina is rare. I have met with but two cases.

In one case I found that the bladder wall was so far involved that we could do nothing.

In the other case, the carcinoma involved the lower urethral wall and I was able to exsect the entire urethra down to the bladder and to keep the patient comfortable six months. At the end of that time, there seemed to be a fresh extension and I lost the patient.

THE PRESIDENT.—It would be interesting if we could learn the experience of the members in the use of radium, ultra-violet rays, X-rays, etc.

DR. OASTLER.—In 1907, I treated eight cases of inoperable carcinoma with trypsin and amylopsin, and they are all dead.

THE PRESIDENT.—I have had several cases which I have referred to specialists in electricity and they have tried it—not so much to the patient's satisfaction, perhaps, as to the one who applied it—but without result in any case.

I would say that the Chair has had a similar experience to that of Dr. Oastler in reference to trypsin and amylopsin. They had no effect, except to build up a little false hope, for the time being, in the patient, who would otherwise have thought her case hopeless.

THE PRESIDENT.—It is with very great pleasure that I introduce to our Society Dr. Reuben Peterson, professor of obstetrics and gynecology, at Ann Arbor, Mich. He is known and loved by most of us, and I want the rest of you to meet him and know him. The subject of his paper will be

PRESERVATION OF THE OVARIES, ENTIRE OR IN PART, IN
SUPRAVAGINAL AND TOTAL HYSTERECTOMY.*

* See original article, page 633.

DISCUSSION.

THE PRESIDENT.—This valuable paper of Dr. Peterson's is now before us for discussion. Before throwing it open to the members, I would like Dr. Peterson to state whether he leaves the tube when he leaves an ovary, so that we will rightly understand his method of procedure.

DR. PETERSON.—I am unable to give exact figures regarding the number of cases where the tubes were removed when the ovaries were retained. Roughly speaking I should say that I had removed the tubes in perhaps a quarter of the cases. If there be any virtue in the contention of Werth that interference with the blood supply of the ovary causes a diminution of its function, probably a removal of the tubes is contraindicated where we leave ovaries for the purpose of mitigating the symptoms of the menopause. Certainly in the future I would not remove the tubes.

DR. BOLDT.—I regret that I did not have time to look up my statistics on this point, and I can, therefore, speak only from general clinical observation; my general observation is, as nearly as my memory serves, about the same as that which Dr. Peterson has recorded. I have been an advocate—invariably after the first few years of my experience—to leave in ovarian tissue when consistent, whenever I did an abdominal operation for removal of the uterus. I will say further, that the conclusion Dr. Peterson has arrived at regarding the removal of ovaries when completely or nearly completely degenerated is fully in accord with that observed by me. If the ovaries were removed, or tumors were removed, and a portion of healthy ovarian tissue was left, then the symptoms following such operation were mitigated, they were comparatively slight—in many cases none at all—if the ovarian tissue left was still in a functioning condition. The majority of those patients, from whom the ovaries were removed did have menopause symptoms following during a period of one to three years or more and so I arrived at the conclusion that the wisest course in the interest of the patient was to leave as much ovarian tissue as possible in all cases.

DR. VINEBERG.—Is the menopause entirely eliminated by leaving a portion of the ovaries when the uterus is removed? In other words, a woman naturally comes to the menopause. Does she escape if she is fortunate enough to have the uterus removed with a fibroid and some ovarian tissue left behind? I have not been able to look up my cases, but it seems to me that it would be pretty hard to determine whether the cases in which an ovary was left, or a portion of the ovary, were benefited thereby or not. I think a great deal depends upon the individual. If you take a neurotic individual—I know persons in my experience—they will have menopause symptoms after quite a long time, independently of whether the ovary is left or not. I have a case under observation, a very close friend, whom I see a great deal of. When I removed the uterus for

fibroid, the left ovary was left in situ, and she continues to have very marked symptoms. In another case, a woman who had reached the time of life when you would naturally expect the menopause—forty-eight—I removed the ovaries. She is having very marked symptoms of menopause.

There is one case recorded in literature that shows that the ovarian tissue does not atrophy entirely with the removal of the uterus. A remarkable case recorded by Wendler in which the uterus had been removed by vaginal hysterectomy. Nine years later she was found to have an ectopic pregnancy in the tube opening into the vagina. In fact she had menstrual molimina during the nine years regularly, but during the time of her pregnancy the molimina ceased. In cases of non-development of the uterus with well-developed ovaries we have an analogous condition to that caused by removal of the uterus without the adnexa. In the former cases, menstrual molimina are not uncommon, and they may be of so severe a type as to call for the surgical removal of the ovaries as in one of my cases. Why in the one case we have to open the abdomen to remove the ovaries when there is no uterus, and in the other one leave the ovaries when we remove the uterus has always been a puzzling question to me.

DR. MABBOTT.—Raising the question as to the influence of the general health of the patient on the severity of menopause symptoms reminds me particularly of a single case which presented itself in the outdoor department of the New York Hospital. A girl, as I remember, about sixteen or seventeen years of age, with amenorrhea, was brought there by the woman superintendent of a department store in One Hundred and Twenty-fifth street. The girl was brought simply because this woman superintendent had learned that menstruation had ceased for three months, and from the standpoint of a possible pregnancy or other disorder. On most diligent inquiry in the presence of this older woman, I was satisfied that the girl was virgious. I was also satisfied that she was anemic, but suffering only from amenorrhea. Curiously enough she insisted that she was in perfect health. I assume her indoor occupation had caused just enough anemia to account for amenorrhea. I did not examine the patient but recommended a tonic, I think some form of iron, and told the superintendent to report back if there were reason to suspect anything different. I am satisfied that there was a case in which the patient's health was improved by the cessation temporarily of menstruation. The same might be true at the menopause. I think that is a matter that in future statistics, of course, will be worked out more fully, as to the general condition of the patient at the time of the operation, and whether that does not influence the severity of the artificial menopause very decidedly.

Ten years ago for the purpose of obtaining data regarding the severity of the artificial menopause, I obtained the post-

operative histories of some 250 patients who have had pan-hysterectomy performed upon them, and also, about 150 who had been subjected to the more conservative operations, leaving in the uterus or the ovaries entire or in part. These patients were operated upon at Roosevelt Hospital for the most part though many were treated at other hospitals and private institutions.

The results of my researches were similar in many respects to those of Dr. Peterson. About 90 per cent. of the patients suffered from symptoms of the artificial menopause, more or less severe. I found, however, that women who had undergone operation for suppurative disease suffered to a greater extent from these symptoms than those treated for other disease. Another feature of interest was the fact that the symptoms of the artificial menopause extended in many cases over a period of from eight to twelve years, and in one patient twenty-two years. Some of the women were thoroughly miserable.

Where the ovaries were left in whole or part, a marked difference was apparent, and, although I cannot give the exact percentage, the symptoms of the artificial menopause were absent in a very large proportion of the patients. The condition varied as to whether a portion or a whole ovary was left. One case worthy of particular mention, where only a portion of one ovary was left, continued to menstruate and is now three months pregnant. This was a case of double suppurative salpingitis with abscess of one ovary and partial infection of the other. Both tubes were removed up to within one inch of the horns of the uterus. The remaining portions of the tubes were split for half their length. Examination of these 400 odd patients satisfied me that where the ovaries and tubes have to be removed the uterus had better be taken also, for when left it often causes trouble as a result of long standing metritis and endometritis, and its removal has no effect upon the symptoms of the artificial menopause.

A paper on the results obtained from the examination of these patients was published in the *AMERICAN JOURNAL OF OBSTETRICS*, 1901.

DR. KRUG.—In the face of such carefully tabulated statistics, I am reluctant to discuss the subject as I am at a disadvantage, because I have not my own at my fingers' ends, and I have to rely on my memory to state the facts as they appear to me.

So far as minute statistics go Dr. Peterson has me beaten to a standstill. As to the number of cases I can give him a big discount. My experience is almost diametrically opposite from that held by him and several other speakers to-night. In fact after some of the utterances heard this evening, I would be afraid were I in their places to find the indication for hysterectomy in fibroids if there is to be eight, ten or fifteen years of such suffering coming afterwards. Their patients seem to suffer more from the artificial menopause than they did from the fibroids.

Naturally I have little means of controlling the after-histories of the ward cases except in few instances, but I have excellent statistics and a good memory for my private cases, and I assure you that I have never met with the reverses that some of the speakers have mentioned. I will say that unless there is special reason or an expressed wish by the patient that some of the ovary should be retained, I have always made a clean sweep of it and removed the ovaries at the same time I did a hysterectomy, whenever the proper indication was found for one. Most of my hysterectomies nowadays are done from above with a most careful whipping of peritoneum over the stumps.

I doubt whether some of the symptoms attributed to the artificial menopause are not in reality due to the technic of the operation. Adhesions will cause all kinds of trouble, and might be erroneously put under the head of troubles from an artificial menopause. In my most intelligent patients, those who can define their symptoms, I should say on an average six months is the most they suffer from discomfort. If a case goes over a year it is a rare and an exceptional one. In all these cases I advise plenty of outdoor and indoor exercise, if possible under the guidance of a gymnastic teacher. I let them swim, row, play golf, etc.—let them do everything to get their circulation in order. I do not know whether it has anything to do with it, but in some cases I thought I had additional good results from the administration of ovarian extract.

In these statistics of Dr. Peterson, I miss one important thing: Has he not come across cases where ovarian tissue was left behind—when on account of leaving it, trouble arose afterwards? I, for one, have had several cases, not of my own, but of other operators, where I had to take out diseased tubes and ovaries, when ovarian tissue had been left in doing hysterectomy, and this tissue became diseased in various ways. I want to be as brief as possible, but there are undoubtedly cases where the fact that the ovary is left behind will cause renewed trouble and necessitate a second operation. Dr. Vineberg has taken the wind out of my sails in one of the strongest arguments against leaving the ovaries in doing a hysterectomy. I have a number of cases, and I think every busy gynecologist will remember some cases of congenital absence of the uterus where the ovaries were present, causing vicarious bleeding and such severe suffering that extirpation of the rudimentary ovaries became a necessity. Now to my mind the case of a fibroid uterus extirpated with a part of one or two ovaries left behind places the patient in an identical position, involving unnecessary risk, without any tangible benefit.

DR. JEWETT.—Having missed most of the paper I fear I cannot add anything to the discussion. To properly discuss the question requires a statistical study such as has been presented in the paper. In my own cases the difficulty I have encountered in arriving at definite conclusions has been partly from the fact

that the troubles of the menopause usually are due more to the general health of the woman than to pelvic conditions. Another difficulty is the fact that it is hard to estimate the value of subjective evidence in many women of the class who come to operation. I am inclined to think that the number of cases in which the ovaries can be saved with benefit after hysterectomy must be small.

DR. POLK.—I have listened to the paper and to the discussion with a great deal of interest, for the reason that I gave up leaving the ovaries as a routine after hysterectomy, having kept it up for the space of six or seven years, and the reason I abandoned it was because I could not convince myself that I had adequate results. I was conscious of the fact, as has been pointed out by Dr. Peterson, that temperament entered very largely into this question of menopause suffering, and that where apparently an ovary might be protecting the individual, and the loss of the ovary on the other hand might be occasionally the cause of the patient suffering excessively—after all it might be due to causes lying back of the presence of the ovary in the individual case and they might belong to families, which if you were to follow each female up, you would discover that their females had symptoms present in all cases, and the individual case was an expression simply of the family temperament. After meeting with cases of this character, I felt disposed to attach less importance to the presence of the ovary itself than I had previously done. The point raised by Dr. Krug, borne out by his very large experience is suggestive, viz., that the tendency of these ovaries when they become diseased and take on a growth is to degenerate into malignant tissue, and have always the tendency to become closely attached to the coils of the intestines, giving rise to a condition which presents such anatomical difficulties in the way of extirpation as practically to make their removal entire very difficult, at any rate without an intestinal resection, that practically means the destruction of the patient. Some of these cases, of course, that take on this malignant deterioration may be remedied without much difficulty, but then there are others in which the difficulties of attachments to the small intestines are so great as to make their removal practically impossible.

It has always been a matter of keen interest to me whether the mammary gland exercises any influence upon the condition of the patient aside from mere lactation. I do not know of any observation being made of any secretion within the mammary gland which may exercise some influence upon the individual as a whole. Of course if such is the case it broadens the question materially, and will bring up, therefore, the possibility of a certain number of these cases being relieved by the administration of extract of the mammary gland just as the doctor has spoken of the extract of ovarian tissue. In some of these cases I have found extraordinary relief from the use of extract of the

mammary gland to relieve the symptoms of the menopause. We are already much indebted to Dr. Peterson. I, for one, personally will be very much obliged if he can persuade me to go back to the practice which I have practically abandoned for the reasons I have mentioned.

DR. HOWARD C. TAYLOR.—It has been my custom, if the patient is over thirty-five years of age, to remove both ovaries in cases in which the uterus is removed, and I have not seen the severe symptoms of the artificial menopause that have been spoken of here to-night. I think beyond doubt if we can exclude the symptoms of the menopause these patients are in better physical condition if the ovaries are removed. They have less pain and less abdominal discomfort. If the patient is one who has to work to earn her living and is unable to take special care of herself this is a factor of importance. While it is true, that these patients may have symptoms of the artificial menopause, in many cases the symptoms are not severe, no more so than those of the natural menopause and the only difference is that the symptoms come on after the operation instead of the time of the natural menopause.

I would like to ask Dr. Peterson if he has seen more trouble of the nature of pain or abdominal discomfort from resecting an ovary than from leaving an entire ovary.

THE PRESIDENT.—The Chair would have to throw in his lot with Dr. Peterson. It has been my custom for a number of years to save every bit of healthy ovarian tissue that I could. I have had haunting me for the last fifteen years a woman from whom I removed both ovaries at the Roosevelt Hospital. She has been a complete nervous wreck ever since and every once in a while she comes to my office, and I think perhaps that one woman has had more to do with influencing me to leave every bit of healthy ovarian tissue that I could, than all the arguments that could be presented here to-night.

In hysterectomies I have left a great many ovaries that appeared to be healthy and I think in not over two cases in the last fifteen years have I ever regretted doing it, and while I cannot give you statistics or figures, it seems to me that the benefit derived by those in whom the ovaries had been left was so much greater than the annoyance produced in the two cases which had to be operated on the second time, that I have adopted the rule of leaving all the healthy ovarian tissue that I can. I will admit that sometimes a piece of ovary will enlarge possibly to be the size of a full sized ovary, after the operation of resection, and probably this ovarian tissue is not absolutely healthy and yet I cannot but feel that I had rather have an ovary a little diseased in a woman than to have no ovary at all.

And here, again, perhaps I should have to go back to that same case that has been haunting me for the last fifteen years. The picture of a nervous wreck with menopause symptoms continued for fifteen years is a picture that one does not want to

see more than one of, and in those in whom I have left either a whole or a part of an ovary, it has not been my fate to see such a picture. Therefore, I cannot but argue that patients with either a whole ovary or a portion of an ovary left are better than those with both ovaries out.

DR. PETERSON.—I do not wish to be misunderstood. The fact that out of 173 cases of hysterectomy I was only able to tabulate twenty-eight in which some ovarian tissue was left shows that I have been very conservative in this regard. In society discussions, I have expressed myself more than once as being uncertain whether the leaving in of ovarian tissue had any influence, as far as the troubles of the menopause were concerned. But I was aware that my opinion was merely an impression. My paper records an attempt to ascertain the truth from a statistical study of my own cases.

The statistics of Noble and others have shown how frequently the appendages are diseased in fibroid tumors of the uterus. Consequently many times we shall be obliged to remove such diseased appendages when hysterectomies are performed. But when the ovaries are beyond question healthy, do we benefit the patient by conserving the ovaries? My own investigations would lead me to answer this question in the affirmative.

I had looked to see Dr. Polk advocate the retention of the ovaries after hysterectomy, whenever such a procedure was safe, on the ground that there was a certain influence emanating from these organs, which had much to do with the well-being of the patient. But as I understand Dr. Polk, he now removes the ovaries with the uterus because in some instances he found when they were retained that they subsequently became diseased. My own experience is more in accordance with Dr. Cragin's. A large part of my operative work is referred by physicians, who see to it that the patients whom I do not cure return to me. Yet out of these twenty-eight cases I know of only one patient who had to be operated on a second time for subsequent disease in the ovarian tissue which was retained.

There is much about this question of ovarian secretion we are unable to explain at the present time. Some time I believe we will be able to answer such questions as have been propounded by Dr. Vineberg and Dr. Krug.

Dr. Oastler's conclusions in his series of cases that the troubles of the menopause were more severe after hysterectomies for inflammatory disease, are exceedingly interesting, for they are the reverse of my own statistics. I found that the troubles of the menopause are not more severe after hysterectomy for inflammatory disease, than after the same operation for fibroid disease. This then answers the plea that many of the symptoms of the menopause are due to individual neuroses, for surely there is no class of patients more neurotic than those whose health has been undermined by long-continued pelvic suppuration. Dr. Oastler's conclusions were quite similar to my own

regarding the duration of the artificial menopause in some cases. I certainly was surprised to find that such symptoms extended over such long periods. I do not believe that the removal of a uterus ever causes insanity. Among the many cases of hysterectomy there will be a certain percentage of the women who will become insane, but the mere fact that insanity follows the operation does not prove that the latter was the cause of the condition.

I do not believe, as Dr. Krug has intimated, that the ordinary symptoms of the menopause, such as flushings, sweatings, etc., will ever arise from adhesions, which are apt to form after all kinds of abdominal operations. I believe if Dr. Krug will make a statistical study of 200 of his hysterectomies, he will be surprised how much longer than a year they suffer from hot flashes and other disagreeable symptoms of the menopause. In comparison with the eradication of the disease which called for the operation, they look upon the troubles of the menopause lightly, but that they suffer from them and for long periods of time, he will convince himself, if he questions them closely.

Undoubtedly there will be cases where subsequent troubles will arise from leaving behind of ovarian tissue. We are all liable to err and consider diseased tissue healthy. But what I contend is that these cases are comparatively few, considering the large number of hysterectomies performed. The fact that a few cases have to be reoperated should not deter us from conserving ovarian tissue if such conservation is going to help our patients.

Dr. Cragin speaks of the enlargement of the ovary following its retention after hysterectomy. Glaevecke, Abel and others have shown that after the removal of the uterus and the retention of an ovary, there is a primary enlargement of the organ followed by a subsequent atrophy. This atrophy is less after the high amputation operations with preservation of the blood supply of the ovary.

Dr. Taylor is undoubtedly right in his contention that the women will have the menopause any way even if an ovary or ovaries be left behind. But the retention of the ovaries will tend to make the menopause come at the natural age and tide the woman over the period just subsequent to the operation, a period which is always trying.

DR. POLK.—I seem to have been very infelicitious in my remarks because I seem to have given Dr. Peterson a wholly different impression from what was in my mind. My remarks were based wholly upon cases in which the uterus had been removed, and had no bearing whatever in cases where the uterus remained. You did not give me credit for that in my reply. You took the ground that I condemned all ovarian tissue, no matter what the condition was, as I understood you. Then I desire to make that point very, very clear, that I have in no way retreated from the position which you think I have aban-

doned in reference to the leaving of the ovaries when the uterus remains, but I have abandoned the practice of leaving the ovaries where the uterus is removed and there is no menstruating structure, the ovary being the only part remaining. I have questioned whether it is wise to leave such ovaries in and have therefore abandoned it, but as I say, I am perfectly willing to go back to it if I can be convinced that my former practice was the better one.

I do not wish Dr. Peterson to go away from here with the impression that I always removed ovarian tissue whether the uterus is removed or not.

DR. PETERSON.—Possibly I have not made myself clear. I merely wish to say that, because of Dr. Polk's exceedingly valuable contributions along the lines of conservative work on the ovaries, I looked for him to advocate their retention after removal of the uterus and this on the ground that there was more to the ovary than its function of ovulation. I can see that Dr. Polk bases his practice of removal of the appendages after hysterectomy upon the results of his surgical experience, which after all is the final test.

THE PRESIDENT.—I am sure we are all indebted to Dr. Peterson for coming so far and giving us so entertaining an hour to-night.

On motion, which was duly seconded, Dr. Peterson was given a vote of thanks for his kindness and instruction.

Which motion unanimously prevailed.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of December 6, 1907.

The President, I. S. STONE, M. D., in the Chair.

DR. I. S. STONE presented a

GALL-BLADDER CONTAINING A LARGE NUMBER OF CALCULI.

The specimen was removed from a woman thirty years of age, who had been complaining for several months of pain below the ribs on the right side on a level with or below the umbilicus. The symptoms had not been of sufficient gravity to demand expert examination and she recovered sufficiently to come several miles by carriage to the city to enter the hospital for treatment. A mass was found between the umbilicus and the anterior iliac spine, very near to McBurney's point. The right kidney was movable and we were able to exclude renal involvement for that reason. The diagnosis was between a large and adherent gall-bladder and intestinal growth or diverticulum. It is seldom that one finds less help from the clinical history than was found in this case. At the time of

operation, perforation of the hepatic flexure of the colon had occurred and infection and perforation of the abdominal wall was beginning. The liver had been drawn downwards (hepatoptosis) and the hepatic and common ducts were so elongated by traction that they were parallel. The cystic duct was obliterated and a stone had nearly succeeded in perforating it so that operative manipulation caused the gall-bladder to break away at this point when we stripped away the peritoneal coat preparatory to a cholecystectomy. It was then discovered that both ducts were visible and this was confirmed by sounding them. After removing the gall-bladder the ducts were sutured together at the posterior margin and approximated very slightly in front so that they could eventually unite.

DR. ABBE.—One of the most interesting points in connection with this patient has been the diagnosis. The mass was located on the right side but so low down that it occupied the location of an appendix abscess, and a vaginal examination was necessary to exclude the pelvic organs. The region of greatest tenderness was close to McBurney's point, and the intestinal symptoms were distinct enough to suggest an inflammatory process around the cecum rather than around the gall-bladder. The fact, as Dr. Stone had demonstrated that the size of the mass could be reduced on pressure pointed to a hollow viscus as the seat of the trouble.

DR. J. WESLEY BOVEE presented the record of a case of

CIRCUMSCRIBED SUPPURATIVE PHLEGMONOUS GASTRITIS; GASTROSTOMY; COMPLICATED BY PREGNANCY AT SIX MONTHS AND ABORTION.

MRS. T., white, thirty-six years of age, who had had seven children, followed in 1895 by a miscarriage, was brought in an ambulance to Columbia Hospital for Women late on the night of October 6, 1907, by her physician, Dr. Jno. S. Dorsey. She had suffered from pain in the epigastric region for several years which was usually relieved by taking food. Her last menstrual period occurred April 13, 1907, and she considered herself pregnant. The history of this illness as given by Dr. Dorsey is about as follows: October 3, she ate heartily of boiled cabbage for dinner and crabs late at night. In the night she was attacked by severe pain in the region of the stomach. Dr. Dorsey was called and gave morphia for pain. The following day the pain continued and vomiting set in. An attempt to move the bowels by enemata and cathartics was unavailing. The temperature was elevated, ranging from 99.5° to 101.5° F.; the pulse rapid and weak. The next day croton oil was employed by mouth but the bowels failed to respond. The various remedies at the command of Dr. Dorsey were not effective in relieving the pain, constipation and vomiting. The vomited material was first solid and partially digested food. Later it was watery and frothy, changing to dark green. She was so enfeebled and appeared to be so ill that he

secured an ambulance and took her to the hospital Sunday night as already mentioned. No chill or sweat was experienced. I saw her about 11 o'clock that night, she having reached the hospital a few minutes earlier. At that time her pulse was thready and her countenance anxious in appearance. On examination on the anesthesia carriage I discovered the uterus extended to an inch above the umbilicus and the epigastrium was distended, exquisitely tender and tympanitic. She was promptly anesthetized, and in the presence of Dr. Wallace Neff and Dr. Dorsey a median line incision above the uterus was made. The intestinal loops were congested but nonadherent. The stomach was palpated. It was found to be fully three-fourths of an inch thick at the middle of the greater curvature, gradually thinning toward the cardiac end. In the pyloric end and in front was a mass nearly the size of a man's fist that was soft, though not doughy to touch. This gradually thinned out toward the middle of the stomach. The stomach was opened at about its middle by a longitudinal incision of about three inches and the mucosa inspected. The lumen of the pylorus would not permit the entrance or engagement of the tip of my little finger. To more definitely determine the nature of the enlargement a separate short incision was made over it, when the nature of its contents was manifest. Gauze was packed around it and it was opened and two or three ounces of grayish pus escaped. The long incision was closed and the pus cavity wiped out. A rubber tube was tightly sutured into it and brought out of the abdomen. A light gauze drain was packed about it. She was fed by the rectal route for twenty-one days. Five days after operation liquids were given by mouth and salt solution by hypodermoclysis, as liquids by rectum did not quench her ravenous thirst. The following day contents of the stomach came through the wound. A few days later solid food was given and the tube removed. Stomach contents ceased escaping in a few days. On the eighth day with little effort she aborted, the fetus living three hours. With the exception of infection of the abdominal incision, which required resuturing, she has made an uninterrupted recovery.

DR. WALL, in discussing Dr. Bovee's case, said that the diagnosis must necessarily be difficult and he did not see how it could be made before opening the abdomen.

DR. BALLOCH asked if there had been any communication between the lumen of the stomach and the abscess, and also if there was any explanation of the occurrence of the intestinal flatus.

DR. WHITE asked what treatment had been given to the stenosis of the pylorus.

DR. VAUGHAN said that there had recently been a similar case at the Government Hospital for the Insane and that the examination at autopsy had showed no direct source of infection for the gastric abscess.

DR. BOVEE, in closing the discussion, said that he had found no case in literature where pus had been found on operation.

This was a case of suppurative phlegmonous gastritis of which there were less than 100 cases on record. In this case, the mucous membrane had showed no evident ulceration and in many autopsy cases none had been found. Some had been due to traumatism, some followed operation, and some occurred after cancer; none had been attributed to tuberculosis. The diagnosis before operation must always be doubtful. The constriction of the pylorus had been considered in this case as due to the inflammatory exudate, and the pylorus had evidently become patent again as the patient was now well and gaining strength, and flesh.

DR. LOREN JOHNSON read the essay of the evening on
THE NECESSITY FOR ARTIFICIAL FEEDING OF INFANTS.*

DR. GRASTY, in opening the discussion, agreed that too early schooling was frequently the cause of chorea, anemia, pelvic trouble and breast trouble. That the reasons for resorting to artificial feeding due to the mother were malignant and wasting diseases, tuberculosis, syphilis, a milk too high in proteid, and a hereditary insufficient supply of milk. That the causes for artificial feeding arising on the part of the child were, prematurity, continuous lack of gain in weight, and certain diseases such as scurvy, marasmus, and rickets. He thought it advisable to have a laboratory examination of the mother's milk, to underfeed rather than to overfeed the child so far as the digestibility of the food was concerned.

DR. ADAMS did not consider heredity as effective as environment in the cases where successive generations were unable to nurse their children. He blames the home rather than the school for the bad hygiene of the child; the rushed breakfast, cold sandwich for lunch and incongruous dinner, none of which were adapted to supplying the nutrition for the body and mind of the child. He believed that the remedy lay in teaching the parents to care for the health of the child, and so develop a woman that could nurse her children.

DR. WALL said that there were other factors beside those of the "finishing school" class which interfered with the development of efficient mammary function as was seen in the women of the lower walks of life, who also were unable to nurse their infants, and yet he had known one such case where the child had been nursed till the fifth year of age. He thought the late marriages due to the strenuousness of life might be considered a cause for the lack of ability to nurse. He asked if any statistics were available to show whether or not the same conditions existed in previous centuries.

DR. FRY said that his statistics showed that about 20 per cent. of mothers did not nurse. In Munich 50 per cent. of the mothers did not nurse. He thought the breast degeneration was associated with degeneration of the pelvic organs, all part of a progres-

*See original article, page 671.

sive degeneration. He would keep the boys and girls together at out-door play until puberty. He thought the fifteen years after puberty were most important in the development of the maternal organs and that during those years especial care should be given to the girl's health. He thought that an alcoholic ancestry for two generations usually made the girl unable to nurse. As a rule girls needed more exercise, fresh air, and physical development. He thought that when a mother was unable to nurse her infant she should be treated with thyroid extract and copious amounts of fluid to drink.

DR. FREMONT SMITH considered the tendency of modern life to be away from motherhood, that women have to earn their living and so tend to drift away from their normal physiological thoughts and actions. He believes thoroughly in fresh air for developing the health of the infants and older people and thinks the hygiene recommended for tubercular patients would help a great deal in the development of normal functions.

DR. ACKER did not know why many of the mothers could not nurse their children. In some cases he has seen a sudden cessation of the milk supply at the end of six or eight weeks without any apparent cause. In one case he clearly demonstrated the cause to be the pressure due to corsets which constricted the blood supply to the mammary glands.

DR. STONE, referred to a paper read by DR. W. W. Johnston some years ago arguing against the kindergarten and in favor of the playground education of children until they were eight years old.

DR. MORGAN thought that apartment life and the worries of the servant question are factors in decreasing the ability of the mothers to nurse. He did not believe that alcohol decreased the supply of milk.

DR. COOKE believed that the greatest work a woman could do was to devote her life to the bearing and rearing of children. He said that he would like to see the prejudice against the night air, and sleeping in the night air done away with.

DR. LOREN JOHNSON, in closing the discussion, said that while undoubtedly there were a number of causes for the inability of the mothers to nurse their infants yet one of the prominent, if not the greatest factor in causing the atrophy of the breasts, was, in all its aspects, the school life.

REVIEWS.

AMERICAN PRACTICE OF SURGERY. A Complete System of the Science and Art of Surgery. By representative surgeons of the United States and Canada. Editors JOSEPH D. BRYANT, M. D., LL. D. and ALBERT H. BUCK, M. D., of New York City. Complete in eight volumes. Profusely illustrated. Volume IV, pp. 1010. New York: Wm. Wood and Company, 1908.

The fourth volume of this monumental work opens with a very good chapter of 104 pages on dislocations, by Emmet Rixford, of San Francisco. Part XIV, the section on *Operative Surgery*, opens with a sound discussion by Charles B. G. De Nancrede, of Ann Arbor, on the influences and conditions which should be taken into account before one decides to operate. The preparation for an operation, the operation itself and the care of the patient during and immediately after the operation are thoroughly gone over by George Ben Johnston, of Richmond. The chapter on anesthetics and the production of general anesthesia is by Freeman Allen and F. E. Gorland, of Boston. The very interesting subject of local anesthesia is ably handled by James F. Mitchell, of Washington. The chapter on amputations and disarticulations is by William L. and J. S. Rodman, of Philadelphia; that on excisions of bones and joints by Horace J. Whitacre of Cincinnati; on ligature of arteries and veins in their continuity by John M. Keyes, of New York; the technic of minor surgery by Russell S. Fowler, of Brooklyn; on plastic surgery by James S. Stone, of Boston.

Part XV, on *Orthopedic Surgery*, contains chapter on congenital dislocations, by Charles F. Painter, of Boston; torticollis, by George D. Stewart, New York; infantile paralysis, by Painter, of Boston; deformities and disabilities of the lower extremities by Royal Whitman, of New York; tuberculous disease of the spinal column and the resulting deformities, by Clarence L. Starr, of Toronto.

BIER'S HYPEREMIC TREATMENT in Surgery, Medicine, and the Specialties. A manual of its practical application. By WILLY MEYER, M. D., Professor of Surgery at the New York Post-Graduate Medical School and Hospital; Attending Surgeon to the German Hospital; Consulting Surgeon to the New York Skin and Cancer Hospital, and to the New York Infirmary; and PROF. DR. VICTOR SCHENIEDEN, Assistant to Prof. Bier, University of Berlin, Germany. Pages 209 and 95 illustrations. Philadelphia and London. W. B. Saunders Company, 1908.

This book, the first and only work of its kind in the English language, is undoubtedly of value and interest to all physicians. The authors have embodied in it the knowledge they have gained from a wide and extended experience with Bier's hyperemia.

The book fills a definitely felt want and the clearness, terseness, and conciseness of the diction add materially to the force of the author's statements. Theories concerning the treatment are not discussed at length, the greatest attention being given to its practical application. The first portion of the work is devoted to a discussion of the advantages of the hyperemic treatment over other methods of treatment. Then follows a description of the various forms of hyperemia (arterial, venous, hot air), their modes of application and indications. In the "Special Part" the authors take up systematically the indications as to when and how the hyperemia treatment should be applied in surgery, internal medicine, gynecology and obstetrics, genito-urinary diseases, otology, ophthalmology, rhinology, pharyngology, laryngology, neurology (including psychiatry), and dermatology. The book covers the entire subject of hyperemia from a practical point of view. The text is amplified with ninety-five excellent illustrations which greatly aid in its understanding. Altogether the book is a most excellent one and should be read with interest and profit by all who are interested in this form of treatment. It will certainly aid materially in introducing generally in the United States Bier's teachings which are of far-reaching importance and of great practical value.

A. S.

THE TRANSACTIONS OF THE EDINBURGH OBSTETRICAL SOCIETY.
Vol. XXX, Session 1906-1907. Octavo, pages 297. Edinburgh, 1907, Oliver and Boyd.

The volume contains 16 articles, many of which have appeared in current journals. The specimens presented during the meetings and the discussion of specimens or papers are also reported. Of the articles the inaugural address by *Ballantyne* "On The Future Of Obstetrics," a fanciful picture of conditions in 1940, is clever and interesting. Two other articles are well worthy of notice: "Exophthalmic Goiter in its Relation to Obstetrics and Gynecology," by *Croom*; and, the paper by *Elizabeth H. B. Macdonald* on "Intractable Uterine Hemorrhage and Arteriosclerosis of the Uterine Vessels."

R. F.

ATLAS DER GYNAKOLOGISCHEN CYSTOSKOPIE; VON PROF. DR. W. STOECKEL, Director der Universitäts-Frauenklinik in Marburg a/ L. Mit 14 lithographischen Tafeln. Berlin, 1908. Verlag von AUGUST HIRSCHWALD, NW. Unter den Linden 69.

The atlas consists of 14 plates comprising 70 illustrations, 16 of which are in their original colors. The illustrations embrace a fairly comprehensive survey of lesions of the female bladder, although it appears to us, that the author has included too many rarities. Two plates, Nos. 9 and 10, showing the cystoscope in place, in the side and knee-chest positions respectively, are poorly executed and to our view, are entirely unnecessary. The remaining plates are excellent reproductions, the uncolored ones, particularly appearing almost as photographs. To the inexperienced this atlas should prove of great value. E. M.

BRIEF OF CURRENT LITERATURE.

OBSTETRICS.

Enucleation of Uterine Fibromyoma During Pregnancy.—In the case reported by Herbert Williamson (*Lancet*, Feb. 8, 1908), acute abdominal pain began suddenly in the fourth month of pregnancy and a rapidly growing tumor was found at the side of the uterus. The patient rapidly lost strength and showed signs of toxemia. At about six months a fibromyoma, attached to the right side of the anterior aspect of the uterus by a pedicle rather thicker than a man's wrist and adherent to adjacent viscera, was enucleated. The uterine mucosa was exposed though the cavity of the uterus was not opened. The hemorrhage was arrested by catgut sutures in the uterine wall. The tumor weighed seventeen and one-half pounds. It showed degeneration, especially toward its center. Premature labor occurred two days later. The case is reported because instances of operation upon the pregnant uterus without interruption of pregnancy are so frequently recorded that the writer thinks there is a tendency to feel a false safety in such procedures. He holds that a fibroid should not be enucleated during pregnancy unless it causes or threatens to cause urgent symptoms.

Cesarean Section Following Ventrosuspension of the Uterus.—Statistics show that dystocia is far more liable to follow fixation of the uterus to the parietal peritoneum, than it is suspension of the uterus. Still in a surprisingly large number of cases dystocia has become the sequel to ventrosuspension of the uterus. This is illustrated by two cases reported by Reuben Peterson (*Phys. and Surg.*, Dec., 1907). The writer favors shortening the round ligaments through a single incision when it is necessary to operate for retroversion.

Uterine Fibroids Complicating Pregnancy.—G. F. Blacker (*Clin. Jour.*, Feb. 26, 1908) feels that the dangers of fibroid tumors complicating pregnancy have been considerably exaggerated, and thinks that in the majority of cases labor takes place spontaneously without any complication. In dealing with these cases one should, whenever possible, allow the pregnancy to proceed to full term, considering the life of the child as well as that of the mother. In cases where undue difficulty is likely to be met with in any attempt to deliver the child through the natural passages, Cesarean section is likely to give the best results. The removal of the uterus with the fetus *in situ* is justifiable during the early months of pregnancy only when the conditions are such as to directly imperil the life

of the mother, since in these circumstances only is one justified in destroying the life of the fetus.

Dental Disease in Pregnancy.—J. E. Power (*Jour. Amer. Med. Assn.*, Feb. 15, 1908) favors the extraction of all broken-down roots under local anesthesia as pregnancy presents the conditions for abscess formation. He believes that the destructive processes which often take place in the teeth during this period are due to the presence in the mouth of a solution of hydrochloric acid containing particles of food, brought up from the stomach by the vomiting of pregnancy. He advises brushing the teeth after meals and at bedtime with a mixture of equal parts of tooth powder and bicarbonate of soda, rinsing the mouth with a saturated solution of bicarbonate of soda after each vomiting and then removing particles of food with floss silk and to brush the teeth with the tooth powder described. The same rinsing should be carried out every four hours as a routine procedure.

Ocular Examination in Toxemia of Pregnancy.—W. C. Posey and J. C. Hirst (*Jour. Amer. Med. Assn.*, Mar. 14, 1908) say that pregnancy may be complicated by a serious toxemia and the urine not show any trace of albumin. This happens when the liver, or other organ apart from the kidney, is unequal to the task put on it by the excessive tissue changes which accompany pregnancy, or when the kidneys, though diseased, have not as yet excreted albumin. This atypical and often obscure form of toxemia manifests itself in early pregnancy by pernicious vomiting; later in persistent headache, failing vision, *muscæ volitantes*, epigastric pain and restlessness. In these doubtful cases any corroborative evidence of actual toxemia is of the greatest value. Under these conditions an ophthalmoscopic examination is particularly indicated. Obstetricians should appreciate that changes in the eye-grounds which have been occasioned by renal disease, and are almost certainly diagnostic of renal disease, may precede the presence of albumin in the urine; and that the ophthalmoscope may give evidence of disease of organs other than the kidneys which has been excited by the toxemia of pregnancy. The writers give a review of the literature of ocular lesions occurring in pregnancy without the presence of albumin in the urine in cases which manifested general symptoms which pointed to the existence of a general toxemia.

Stab Wound of Fetus in Uterus.—D. A. K. Steele (*Surg., Gyn. and Obst.*, Mar., 1908) records a unique case, the extraordinary feature of which lies in the fact that a stab wound through the abdominal walls of the mother, penetrating the gravid uterus, at six and a half months, entering the abdomen of the fetus in utero, completely severing the jejunum, and permitting the escape of the large and small intestines through the wound of the abdominal wall of the fetus—should not in any way have interfered with the growth and development of the fetus in utero, nor seriously

affected the recovery of the mother. The child died eight hours after exploratory laparotomy soon after birth. A mass of intestines protruded from the abdominal wound. The two divided ends of the jejunum were found to be completely occluded.

A Case of Postconceptional Communication of Syphilis.—E. Lesser (*Berl. Klin. Woch.*, Feb. 10, 1908) describes the case of an infant who was born of parents who were healthy at the time of conception, but which was infected during the pregnancy with syphilis. During the pregnancy his father became infected with syphilis, which was communicated to the mother by him. When the infant was born it showed no evidences of having been infected by its mother in the womb but six weeks later it showed a syphilitic roseola. In such a case there is a possibility that the husband was not the father of the child, or that the child might have been infected after birth. In the author's case neither of these was possible. This is in accordance with the experience of physicians in other diseases, in which the child is infected after conception. Such a case is small-pox, in which the child is thus affected. The infection must have occurred before labor, and before the end of the pregnancy the spirochetes must have entered the blood of the child. Infection of the mother in the last weeks of pregnancy, so that the infective material would not have reached the mother's blood, would not infect the child, since the spirochetes must pass through the placenta. Hoffmann's experiments have shown that six weeks after infection with syphilis the syphilitic virus has entered the blood of the patient. It would take from ten days to three weeks for the spirochetes to enter the blood of the infant. The spirochetes must have been in the blood of the infant some two or more weeks before it could produce a papular eruption. In the author's case the infection occurred from fifty-five to fifty-seven days before the mother was confined. The general symptoms in the child occurred forty-eight days after birth. The child was nursed for four weeks after birth, and it had no lip and tongue lesions, therefore the infection was not postpartum.

Lithopedion Causing Acute Intestinal Obstruction.—J. W. Smith (*Jour. Obst. and Gyn. Brit. Emp.*, Mar., 1908) records the history of a case of acute intestinal obstruction resulting from the presence of a lithopedion which had been retained in the abdomen for fifteen and a half years. The gestation was tubal and ruptured at the end of the sixth week. This was accompanied by intraperitoneal hemorrhage. The fetus, thus set free in the peritoneal cavity, continued to develop until the sixth or seventh month. Its death was not accompanied by any of the phenomena of false labor, and no decidua membrane appears to have been passed. The fetus became ultimately separated some distance from the placenta, the head occupying the left side of the pelvis, the placenta the right. The patient

died suddenly some hours after removal of the generally adherent lithopedion and relief of the intestinal obstruction.

Insufficient Decidual Reaction as a Cause of Interruption of Pregnancy.—Romolo Costa (*Ann. di Ostet. e Gin.*, Feb., 1908) presents a new condition as a cause of the interruption of pregnancy. This is an insufficient decidual reaction on the part of the endometrium. The ovum is thus insufficiently attached to the uterine wall and is easily separated from it. In the cases which he studied the placenta was apparently normal when examined by the naked eye, but when microscopical sections were made it was found that the villi were smaller than normal, and did not penetrate the mucous membrane to the normal depth. The intervillous spaces were wider, and there were smaller blood-vessels in the villi. In small portions there was ecstasia of the vessels. In the most of the tissue, however, the stratum of Langhans was very thin and the syncytium small in amount. On the maternal side the decidua was thin, there was a lack of villi, a scarcity of vessels, and a slight infiltration with leucocytes. Obstruction of the vessels, and hypergenesis of connective tissue caused regressive alterations and the death of the fetus. The endometrium has a lack of reactive power and this results in an insufficient formation of decidual tissue.

Dystocia due to Placenta Prævia aside from Hemorrhage.—Vincenzo Caliri (*Ann. di Ostet. e Gin.*, Jan., 1908) considers the subject of placenta prævia with reference to the unfavorable results aside from the presence of severe hemorrhage. The prognosis for the mother is made bad by anomalous presentations of the fetus, danger from sepsis, necessity for numerous operative procedures, and the abnormal behavior of the membranes. The fetus is much less likely to survive. From 1890 to 1905 there were treated at the Maternity in Milan, 101 cases of placenta prævia, 27 central, and 74 partial implantations. When pregnancy is interrupted it often occurs before the fetus is viable; thus many abortions may be referred to a vicious insertion of the placenta. The muscular irritability of the uterus increases as pregnancy advances, and therefore the danger of premature labor. Most of the children are born prematurely and are consequently unable to be brought up on account of their weakness. The complicated presentations that may occur are breech and shoulder. Most of the cases of placenta prævia require some sort of operation during delivery to preserve the life of the mother. This increases the danger, and especially that from sepsis. Again the inertia uteri which is often present, with the abnormal formation of clots and venous thromboses in the uterus, produces a good culture medium for septic germs. When the hemorrhage does not cease with delivery it becomes necessary to extract the placenta by manual means, again predisposing to sepsis. The membranes also may be adherent, hemostasis may be incomplete and sepsis is made easy. Anemia is another possible cause of

death of the mother. The fetal mortality is rendered greater by the hemorrhage, the possibility of asphyxia, and by prematurity.

Stationary Dilatation of the Os Uteri in the Course of Labor.—V. Wallich (*Ann. de Gyn. et d'Obst.*, March, 1908) gives instances from his own experience in which labor was delayed by the cessation of pains and of dilatation of the os for some hours. In general the pains return after some hours of rest. Inertia uteri has been given as a cause. The author is of opinion that inertia uteri does not exist. There are cases in which a too full amniotic sac delays dilatation. In general the delay results from a faulty position of the child's head which does not allow of the adaptation of the diameters of the fetal skull to the pelvic diameters. Artificial rupture of the membranes will not benefit the case as the position of the head will not be affected and the difficulty of possible infection through an open amniotic sac is brought into play. There may be an os that is rigid on account of its infiltration with serum. Sulphate of quinine may be of use. Warm baths are open to the danger of infecting the uterus. Ergot cannot be given at this stage on account of the tetanic contractions which it excites. The best treatment is the expectant. Manual dilatation may be made use of without violence.

Repeated Symphysiotomy.—Robert Jardine (*Jour. Obst. and Gyn. Brit. Emp.*, Mar., 1908) records the performance of symphysiotomy three times on the same patient. Six weeks after the last operation the patient could walk.

Results of Retention of the Membranes and the Best Method of Removal.—C. Louros (*Zent. f. Gyn.*, Feb. 15, 1908) after citing cases to illustrate the evil effects of retention of the membranes, gives the following rules for the use of the general practitioner: The entire removal of the membranes is of as great importance as that of the placenta. We cannot expect that large pieces of membrane will be removed by natural means without infection of the patient. It is necessary to carefully inspect the placenta so as to ascertain whether the membranes have all been removed with it. When retention has occurred the aseptic finger should be introduced into the uterine cavity and the location of the fragment ascertained. The finger may be used for its removal if it is of any size. Whenever hemorrhage occurs during the puerperium, or the lochia are fetid, the examination should be made with the finger and the piece removed with the finger or curette. Care should be exercised after the placenta has passed into the vagina not to tear the membranes by pressure on the fundus uteri or pulling on the placenta. When this has occurred two fingers may be introduced into the vagina and the piece removed. The author thinks that there is less danger from the introduction of the finger under antiseptic precautions than in allowing the fragment to remain until sepsis has occurred.

Diagnosis and Treatment of Puerperal Eclampsia.—Stern and Burnier (*Gaz. des Hôp.*, Feb. 29, and March 7, 1908) state that there are difficulties in the diagnosis of puerperal eclampsia. When it occurs in a hospital it need not be mistaken, but in the homes of the poor it is often difficult to obtain a history of the case. The certainty of the existence of pregnancy and that the patient is a primipara, the existence of albuminuria, or neurotic condition are all of value. The prodromal symptoms include oliguria, dense and high colored urine, markedly acid and containing variable quantities of albumin. This occurs in the last two months of pregnancy. Serine, albumose, and peptones are often found in the urine. Its toxicity is always marked and urea is diminished. These symptoms are not constant. Edema of the face and feet is a valuable sign. There is high arterial tension which is constant and rises as the attacks advance and increase in number. There is hypertrophy of the left heart. Blood examination shows a destruction of the blood cells, an increase in the power of coagulation, and retention of the chlorides and urea. Cephalalgia is a marked symptom, located in the frontal region, with somnolence, apathy, or agitation. Sensorial troubles are common. The three symptoms, high arterial tension, cephalalgia, and albuminuria, are good evidence of the probability of eclampsia in a pregnant woman. The attack consists of sudden convulsive movements of the face extending to the muscles of the neck and upper extremity, followed by tonic spasms with grimacing face, cyanosis, biting of the tongue, and apnea. These last for about twenty seconds, and are followed by violent movements of the face and arms, the legs remaining uninvolved. This stage lasts for about five minutes and the attack may be single or be repeated until death occurs. The temperature rises progressively. The differential diagnosis involves epilepsy, hysteria and chorea major among the neuroses; among organic troubles, cerebral congestion, cerebral tumors, intoxications, and convulsive uremia. The author describes the differential diagnosis between eclampsia and each of these conditions at length. Eclamptic coma must also be differentiated from cerebral comas. The history, temperature, and urinary symptoms are most valuable diagnostic aids. Eclampsia may occur without convulsions, and after labor, this form being the most fatal of all. The complications consist of ecchymoses, biting of the tongue, paralyses and contractures, pulmonary troubles, and cerebral hemorrhages. The prognosis is bad when there has been previous kidney disease; is worse in multiparæ, and is worse according as it occurs longer before the time for the occurrence of labor. It grows worse with the number of the attacks and their length. Intense dyspnea and deep coma are unfavorable. Prophylactic treatment should be entered upon as soon as any symptoms of eclampsia occur, in the form of absolute rest in bed, milk diet, and even temperature of surroundings. The treat-

ment when attacks are imminent or present must be of a mixed variety, no one symptom alone being treated. Purgatives give good results. Chloroform and chloral are used to moderate the attacks. *Veratrum viride* is highly vaunted by some, since it lowers tension, causes perspiration, and lessens toxicity. The author advocates bleeding as of great value in abstracting poison and reducing temperature and pulse tension, and would use it early in the attack as a routine treatment. Injections of artificial serum form a valuable diuretic measure. Surgical treatment involves renal decortication. The author reminds us that the kidney symptoms are not the only ones in eclampsia, and that the results of decortication are variable. The labor should be hastened or brought about when not begun, in the interest of the mother, since relief follows emptying of the uterus. Cesarean section should be done when death has occurred in hope of saving the child.

GYNECOLOGY AND ABDOMINAL SURGERY.

Abdominal Drainage with Aspiration.—Delassus (*Jour. des Sci. Méd. de Lille*, Feb. 12, 1908) examines the various objections to drainage in abdominal operations. They are the uselessness of the procedure, illogical nature of drainage from below upward, secondary infection, and eventration, all of which he considers questionable. The only real objections are the pain experienced in the removal of gauze drains, and the tiresomeness of daily dressings. He finds that after even the most scrupulously careful operations there is a collection of fluid in the lower part of the abdomen in many cases. This it is best to remove in some way. Asepsis is not always dependent on the physician himself. The assistants or the materials used may produce infection. Infection of the liquids contained in the abdomen may take place from the patient herself. The author has drained with simple gauze, with tubes, and finally with a tube and daily aspiration with a syringe through the tube. He believes that he has obtained better results since he has adopted aspiration as a routine measure. There are some simple cases in which it is unnecessary and in which the abdomen may be closed at once, but in the majority of cases aspiration and drainage are the best policy.

Prophylactic Use of the Filagree in Suppurating Wounds of Abdominal Wall.—Having now used a flexible silver filagree in the incision in the abdominal wall in thirty-six cases, Willard Bartlett (*Surg., Gyn. and Obst.*, Mar., 1908) advocates its use as a prophylactic against hernia in cases with infected wounds. That an infected wound will heal with the filagree *in situ* he has shown in five cases, as well as in an equal number in which a previously clean wound became infected after its implantation.

The Abdominal Incision.—C. U. Collins (*Surg., Gyn. and Obst.*, April, 1908) says that abdominal incisions should be placed so they will pass through both aponeurosis and muscle.

The incision in the aponeurosis, and the split in the muscle, should run in different directions. This can be done in a large majority of abdominal operations.

A longitudinal incision should not be made through the linea alba or the sheaths of the rectus, at a right angle to the combined pull of the three side muscles, when it is possible to avoid it.

For very large tumors and cases where the character and location of the pathology is in doubt, the longitudinal incision is probably necessary.

If the longitudinal incision is necessary, the split in the rectus should not be continuous with the aponeurotic incision, but should be placed to one side, and, preferably, through its inner half, to avoid the intercostal nerves which enter the outer half.

Primary Cancer of the Urethra in Woman.—André Boursier (*Jour. de Méd. de Bordeaux*, March 8, 1908) states that only a small number of cases of primary cancer of the urethra have been reported in women. He reports two cases of pavement epithelioma, the form which has been most frequently observed. One of these cases was found to be of tubular pavement cells. The symptoms of the disease are the common ones of difficult urination, pollakuria, retention, and pain. Wassermann has noted pain in coition and frequent micturition. A question of importance therapeutically is the depth to which the disease is developed in the tissues. Winckel has divided these tumors into three groups; in the first the growth has invaded the urethra in the part situated below the symphysis to the length of ten to twelve millimeters. Here a wide excision with a bistoury is indicated, with suture of the urethra to the vaginal mucous membrane to form a new meatus. In the second stage the entire urethra is involved. Here the operation is much more serious. In the third, the neck of the bladder is involved as well as the neighboring parts, and here operation is impossible. Any operation in either case is likely to result in incontinence of urine.

Prolapsus Uteri in Nulliparæ.—Paul Reclus (*Gaz. des Hôpitaux*, March 12, 1908) says that the prolapsus of unmarried women differs in its etiology from that of the married who have borne children. Its symptoms and treatment also vary. The author believes that it results in general from weakness and maldevelopment of the uterine ligaments which is congenital. In a case cited by the author the round ligaments were found to be very small and weak. The patient was treated by an Alexander operation which did not keep the uterus up at all. Previously she underwent a freshening and suture of the perineum with the same result. The only permanent benefit was obtained by ventrofixation, an operation that is of doubtful benefit in a young woman who may become pregnant. This condition is much more likely to occur in young girls who are weak, have irregular menses, and an infantile aspect, with ill-developed muscles and ptosis of the abdominal organs.

Uterine Fibromyomata.—From an analysis of 3561 cases of fibromyomata of the uterus, Stephen E. Tracy (*Surg., Gyn. and Obst.*, Mar., 1908) concludes that a large percentage of these tumors undergo some form of degeneration, but that the majority, 64.9 per cent., of degenerations take place in women who are forty or more than forty years of age, or, in other words, after the menopause. Fibromyomata uteri and visceral degenerations are found associated in a large number of cases. Young women who are anxious for maternity and possess small tumors which are causing no symptoms, need not be subjected to operation, but should be instructed to report for examination as soon as symptoms develop. All fibromyomata uteri which produce symptoms, regardless of the age of the patient, and all fibromyomata uteri in women forty or more than forty years of age, should be removed when diagnosed, because the mortality following operation, below 5 per cent., is less than the risk of carrying the tumor, as from 12 to 14 per cent. of these patients would die if not subjected to operation. Supravaginal hysterectomy is the operation of election because of the ease and rapidity of its execution and because it is followed by the lowest mortality. It should be performed in all cases where a myomectomy is not indicated and where a panhysterectomy is not demanded. Many of the associate conditions would cause death if the patients were not subjected to operation, but the mortality in these cases should not be added to the estimated mortality of fibromyomata uteri, as they are independent lesions, and are in no way connected with the tumor except that the conditions coexist. A thorough pathological study should be made of all fibromyomata uteri which are removed, because of the malignant changes and the degenerations which take place in these tumors.

Treatment of Displacement of the Uterus.—Reviewing some of the recent literature of this subject, W. M. Thompson (*Chic. Med. Rec.*, Feb., 1908) summarizes the trend of opinion at present as follows: Uncomplicated cases of retrodisplacement should have the benefit of treatment, manual replacement with tampons or pessaries, before resorting to operations. Following pregnancy, all cases should be examined one week after delivery for retrodisplacement, and if necessary receive treatment. Complicated cases (adnexal disease, relaxed vaginal wall, etc.) are often cured by the removal of the complications. The general trend of operators, when the case is not beyond the expectation of pregnancy, is away from fixations, toward suspension through shortening the round ligament, whether outside or inside the abdomen is not decided.

Frequency of Endometritis.—B. M. Auspach (*Jour. Amer. Med. Assn.*, Mar. 14, 1908) says that the endometrium of itself is rather infrequently the seat of any pathologic alteration which would justify treatment directed to it alone. The clinical distinction between an acute or a subacute endometritis and a

beginning salpingitis is difficult and the therapy of acute cases is always rest and the application of heat or cold; never an operation or local treatment. When gonorrhea of the endometrium becomes chronic it is usually complicated by inflammatory lesions of the tubes and ovaries. A chronic uterine discharge in gonococcus cases, where the adnexa are not involved, almost invariably comes from the cervix. In neither instance is treatment directed solely toward the endometrium of any service. The class of cases in which the diagnosis and treatment of endometritis is most abused is that in which leucorrhea is the chief, symptom and no reason can be found for it by pelvic examination. A persistent uterine discharge may result from general ill health with constipation or from disease of the myometrium. Analysis of the writer's cases shows that the endometrium is diseased in no more than half of the cases in which curettement is done for a suspected endometritis. The endometrium is most apt to be affected in connection with some other lesion which requires treatment. One must be very guarded in promising a patient that a given uterine discharge will be cured by a curettement. The nonoperative treatment of leucorrhea by the direct application of antiseptic or caustic solutions to the uterine cavity is almost never justified. A chronic discharge from the uterus which is dependent on pelvic disease usually requires more than a curettement or intrauterine applications. In the case of a uterine discharge for which no pelvic origin is apparent, general tonic and hygienic treatment should be given a fair trial before resorting to curettement or to any intrauterine manipulations.

Uterine Perforations.—Louis Riche (*Gaz. de Gyn.*, March 1, 1908) cites the various instruments, surgical and for the production of abortion, that may cause rupture of the pregnant or puerperal uterus. He notes that pathological conditions of the uterus, such as chronic inflammations, tumors, and displacements influence the liability to perforation. When the surgeon feels the instrument slip into an abnormally deep uterus he should be warned to stop and find out if the instrument has not gone further than this organ. Hemorrhage is rarely so severe as to attract attention. Collapse may occur, but is not often present. The symptom that most frequently causes the operator to look for a perforation is a failure of the douche fluid to return after the operative procedure has ended. Pain is always absent when anesthesia is used and is not a prominent symptom in any case. It is possible as a complication to have prolapsus of the omentum or a loop of the intestine, or a perforation or injury of one of these structures. The best treatment in the absence of hemorrhage is absolute immobilization, ice to the abdomen, absence of intrauterine douching. Armed expectation is the indication, since hemorrhage or peritonitis will demand immediate opening of the abdomen.

Relation of Appendicitis to Gynecological Pelvic Diseases.—

S. W. Bandler (*Med. Rec.*, Apr. 11, 1908) claims that appendicitis in the form of an inflammation of the mucous membrane does not result from inflammatory diseases originating in the uterus or adnexa. Involvement of the appendix viewed as a peritoneally covered organ may take place as part of a peritonitis, more or less localized or more or less extensive, which has its origin in inflammatory diseases of the adnexa. Severe inflammations of the appendix, in so far as they cause a pelvic peritonitis or in so far as the accumulation of pus is located in the pelvis, naturally involve the uterus and adnexa in adhesions. They do not cause pyosalpinx, but may cause tubo-ovarian cysts. A differential diagnosis as to the original site of the infection, when the appendix and right adnexa are involved, is often impossible except from the operative clinical standpoint and even then is not always certain. Mild attacks of appendicitis, without the production of well-defined peritonitis, may involve the adnexa without adhesions, but especially by infection of the Graafian follicles, alterations of the stroma and the production of varicocele of the broad ligament. Such alterations in the adnexa generally result from processes extending from the cervix and uterus into the broad ligaments and a definite decision as to the source of the trouble may be often impossible.

Appendicitis and Adnexitis.—Henri Hartmann (*Ann. de Gyn. et d'Obstet.*, Feb. and March, 1908) says that appendicitis is more rare in the female than in the male. The great frequency of appendicitis in the child shows that it is caused by other things than lesions of the adnexa. The habitual cause is an infection of the intestinal canal. Kelly has shown that there is no connection between the appendix and the adnexa, by way of the vessels or lymphatics. The inflammation is conveyed by the peritoneal coat. The appendix in the woman often descends into the pelvis, pressed down by the corset as well as by the weight of the intestines. The appendices removed in gynecological operations are generally found to be diseased. Periappendicitis is frequent. Difficulties in diagnosis are generally in cases of chronic appendicitis without crises, which is manifested principally by the symptom, pain. The pain may extend to the left as well as the right. In adnexitis it is generally located lower down than in appendicitis. A small tumor with a twisted pedicle, a fibroma, or a genital tuberculosis may give pain in the right iliac fossa. The history of the case is of the greatest value. If the symptoms begin at the commencement of menstruation the case is generally one of adnexitis, but the hyperemia accompanying the menses may light up a latent appendicitis. The picture of peritonitis is more marked in appendicitis. Abdominal sensibility and distention are more marked, and temperature is more elevated. Appendicitis is progressive, while adnexitis culminates and then recedes rapidly. The swelling is higher up in appendicitis. By bimanual examination the exudation is found to be long while

in adnexitis it is broad. Treatment demands immediate operation.

Renal and Ureteral Calculi Complicating or Simulating Appendicitis.—According to J. F. Erdmann (*Med. Rec.*, March 14, 1908) difficulty in diagnosis arises only in the slow and interval cases of appendicitis. Only those cases of stone presenting slight evidence of impaction, or slight to no marked urinary, etc., symptoms are mistaken for appendicitis. In the acute variety, when history points to the possibility of calculus, the association possibility must be fully weighed and all factors closely analyzed for a dual disease. In the great majority of stone cases, no matter what position the calculus occupies, from the kidney to the ureteral insertion into the bladder, either one or combinations of the following painful areas are present: Testicular, penile, and inner surface of the thigh, while an additional pain is frequently elicited by pressure in the so-called McBurney area. This latter symptom may be due either to a reflected pain from stone in the hilum or when the stone is impacted in the pelvic portion of the ureter near the spine of the ischium. This pain is to be differentiated from that of an appendicular one by the fact that rigidity of the abdominal muscles is not usually present; that relaxation of pressure by suddenly removing the palpating hand is not followed by the pain usually seen in acute appendicitis; that pressure pain is not usually increased in a line toward the umbilicus, as in appendicitis, but may be so in a line toward the inguinal canal following the course of the ureter; that coughing and deep respiratory pain as seen in appendicitis are unusual in calculus cases. The onset in calculus colic is not usually accompanied by generalized abdominal, epigastric, nor umbilical pain so often seen in appendicitis. Vomiting may be present in both, although present in greater frequency in appendicitis. Elevation of temperature, usually present in all acute and sub-acute appendicular invasions, is not present in calculi cases except there be an infective process in the kidney, etc. Pulse can be relied upon only when taken in series with vomiting, temperature, etc. The previous history must be carefully weighed in arriving at a conclusion of either of these diseases. Pain in the back, loin, groin, inner surface of the thigh, urethra, testes and penis in the male, and vulva and urethra in the female, with occasional frequency of urination definitely points to a possible renal calculus. The urine and its channels must be carefully examined. The microscopic evidences in urine analyses that weigh in the diagnosis of possible stone are the presence of blood, oxalate and urate crystals in excess and epithelium from the hilum and ureters. Blood may be present in the urine in cases of appendicitis, due either to an acute toxic nephritis or to some associated condition, as acute nontoxic or chronic nephritis, floating kidney, etc. Blood without other renal elements and in the absence of other pathological lesions of the bladder, urethra, etc., is the best diagnostic factor o

stone excepting a definite shadow in a radiograph or scratch marks made by contact with the stone of a wax tipped ureteral catheter. In stone in the ureter the cystoscope usually shows redness and eversion or thickening at the mouth of the ureter on the affected side. Failures in radiography are due to the subject being old and feeble and suffering from calcareous degeneration, or occurs in too fat subjects and some few cases of uric acid or urate stones.

Papilloma of the Ovary.—E. Emrys-Roberts (*Jour. Obst. and Gyn. Brit. Emp.*, Feb., 1908) says that primary superficial papilloma of the ovary is derived from the germinal epithelium and underlying connective tissue stroma. The acini in the periphery of the ovary are derived from ingrowths of the germinal epithelium. The vesicles which form so large a proportion of the papillary projections result from papillæ whose connective tissue cores have undergone edematous degeneration. The secondary deposits arise from disrupted papillæ; the dissemination of secondary deposits is favored by ascites. The collection of fluid in the abdomen represents the secretion of the epithelium forming the outer covering of the growth.

Functional Destiny of Ovarian Remains.—P. Zacharias (*Zent. f. Gyn.*, Feb. 1, 1908) refers to a case operated on by him three years ago by removal of the greater part of both ovaries, a small portion having been left *in situ*. The patient has preserved the menstrual function for three years after the operation. The author believes that if even some of the connective tissue structures of the ovary are left behind menstruation will be continued even if there are no follicles left in the tissues. Indications for such a conservative operation are found in young women who wish to preserve the menstrual function. Both tumors must be certainly of benign nature. Both ovaries must be involved in the growth. The author describes three similar cases in which menstruation continued four, two and a half, and one and three-quarters years after the operation. Pregnancy did not occur in any of them, but the first patient had gonorrhea, and the last was not married. If there were follicles in the ovarian tissue left in the third patient they may have become atrophied, or changed by continuance of the previous disease process.

Final Results of Conservative Surgery of Tubes and Ovaries.—The worthlessness of statistics of so-called successful operations when viewed from the standpoint of the patient is acknowledged by every surgeon and physician of experience. Abram Brothers (*Jour. Amer. Med. Assn.*, Feb. 22, 1908) attempts the difficult task of estimating, on the basis of 160 cases of conservative adnexal surgery with one postoperative death and one case of persistent sinus and urinary fistula, the real value of such procedures. Of the 158 cases he has traced 85. Too much stress cannot be laid on the importance of reaching some conclusions in this matter, for it is in regard to the guarantee against

secondary laparotomy that radical adnexal surgery has a distinct advantage over conservative work. If investigations by other operators, based on careful and positive observations, should prove that the morbidity after conservative adnexal surgery is so great as to require an unwarranted number of secondary operations, then the advantages of preserving ovulation, menstruation and possible fecundity are clearly outbalanced by the inconvenience, if not actual danger to life, of a secondary laparotomy. The results which the writer thus far has reached, however, point the other way. He finds that the maximum necessity for secondary operations does not exceed 7 per cent. The post-operative morbidity he estimates at about 23.5 per cent. To attempt to specify the exact value of conservative adnexal surgery in relieving preoperative symptoms is a very difficult task. Many of these symptoms are purely subjective or relative. What may be described as a burning sensation in the pelvis by one woman will be regarded as intolerable torture by another. The amount of pain which the individual woman actually suffers will often be in direct proportion to the development of her nervous system or imagination. Similarly, suffering ascribed to dysmenorrhea, menorrhagia or dyspareunia should be carefully estimated by the medical attendant with these possibilities in view. Postoperative menstrual disturbances were noted fourteen times in sixty-six cases. Concerning the value of conservative operations for sterility resulting from lesions of the tubes, ovaries and pelvic peritoneum, the writer states that he finds notes of only 7.5 per cent. of cases with subsequent pregnancy, yet even this is regarded as a triumph.

Experiments on the Therapeutic Value of Pyocyanase in Gonorrhea in Women.—J. Hofbauer (*Zent. f. Gyn.*, Feb. 8, 1908) has made use of pyocyanase as a local application in six cases of gonorrhea in women with excellent results. It has been found that various bacteria cause to be generated nucleases or energetic bactericidal substances. One of these, pyocyanase, is derived from the bacillus pyocyaneus, and it has been used by Escherich and others in epidemics or grippe and cerebrospinal meningitis. It results in a lessening of the bacteria in the cerebrospinal fluid until they finally vanish entirely. It has also been used locally on the nasal membranes in cerebrospinal meningitis with good results. The pyocyanase was used by the author as an intra-uterine application on a cotton-wrapped probe, and with a syringe in the uterine cavity, and in the urethra. No bad effects were seen by the author in any of his cases. The subjective symptoms of pain and burning on urination were relieved for as long as the treatment was used, that is for about two months. In a week there would be a disappearance of the gonococci from the vaginal secretion, and this would continue for some time. They would eventually reappear, and this was probably due to the fact that the agent could be used only locally, and that it affected only the tissues that it could reach, but could not penetrate to the

deeper tissues that were infected by the gonococcus. These as they were pressed upward by the growth of the mucous membrane brought a fresh mass of bacteria to the surface. These are destroyed as long as the agent is used, but permanent results cannot be obtained until the agent can be used internally and so reach the deeper tissues. It is noticeable that the secretions are not coagulated by this agent as happens in the use of silver preparations. The author recommends further experiments in the use of this valuable agent in the treatment of gonorrhea.

Hematic Cysts of the Mammary Glands.—Pons (*Gaz. de Gyn.*, Feb. 15, 1908) states that hematic cysts of the mammary glands consist of fibrous walls lined with a stratified pavement or cuboidal epithelium. The cyst membrane is thrown into villousities each of which contains a minute dilated blood-vessel, and the villi have been the seat often of extravasation. Some authors believe this growth to be of inflammatory origin. Others refer it to an obstruction of the excretory milk ducts and an extravasation due to trauma or menstrual congestion of the mammary glands. The contents are a serous, sero-sanguinolent, sero-mucous, or oleaginous fluid. When the fluid is drained away they rapidly recur. Their formation is so allied to the fibroadenomata that complete extirpation is indicated lest they undergo cancerous degeneration. The author describes a case observed by himself.

DISEASES OF CHILDREN.

Treatment of Pediculosis Capitis.—An editorial (*The Hospital* Jan. 4, 1908) describes the following easy, safe, and it is claimed, efficient method of removing pediculi with ethyl or methyl alcohol. The patient's hair is all thrown forwards over the forehead, and the patient sits or stands with her face looking down into a large basin; the latter should be far enough below the patient's face to allow of the hair hanging free. Methyl alcohol is cheaper than ethyl but leaves its smell longer in the hair. A pint or a pint and a half of the spirit is poured slowly but steadily on to the patient's scalp; beginning at the roots of the hair behind, and gradually moving towards the crown, making sure that the spirit reaches every portion of the scalp. There is no need to pour the spirit down the hair itself—it will run down it from the scalp; and the pediculi will be seen scrambling from the roots of the hair along towards the free ends and will spontaneously tumble off into the basin. It takes, perhaps, five minutes to apply the spirit in this way; and then the hair may be combed with a wide-toothed comb, or brushed, to get rid of more of the pediculi. The spirit dries spontaneously, so that the hair may be roughly done up, and the patient can go to bed, preferably with a towel laid over the pillow. A single application may be sufficient, but to be certain of the cure the process may be repeated for three consecutive nights. The

pediculi will all be gone after the applications, and the nits will all be dead. The shells of the nits, however, are so firmly stuck on to the hair near the roots that they will still be found if looked for; it only requires that the hair should be carefully brushed and combed for the nits all to come off in time. There is one disadvantage in the method, that it makes the skin smart at any spot where it has been broken, or where there has been sufficient irritation of the skin by the pediculi to cause an actual dermatitis. A word of warning is necessary in regard to naked lights during the application of the spirit. The hair does not suffer at all, or, at most, loses a little luster for a time; the luster can be restored almost at once when the cure is complete, by washing the hair with a little milk, and allowing it to be exposed to the sun for an hour after the milk has been applied.

Acute and Chronic Mastoiditis.—M. A. Broca (*Bull. Méd.*, Jan., 1908) says that in infectious diseases of childhood, such as measles, scarlatina, and grippe, in which ear complications are to be expected, every child who has a rise of temperature that is unusual for the time of the disease, or complains of pain in the head, should be carefully examined for ear trouble. To prevent such complications the throat and nasal cavities should be kept as aseptic as possible by irrigations and applications of mentholated vaseline. The inflammation may gain entrance by way of the Eustachian tube to the middle ear and so to the mastoid process. The opening of the mastoid cells is in the attic, or extreme upper portion of the tympanic cavity. Whenever we see pus oozing from the attic after the tympanic cavity has been cleansed we may be sure that it comes from the mastoid process. The slightest tenderness over the mastoid process, even when unaccompanied by swelling and redness, is an indication for operation to open widely the mastoid cells and the tympanic cavity itself. Delay in operating exposes the child to dangers of sepsis and of intracranial involvement. In some cases the result is a sort of protection by formation of extra bone which nearly closes the tympanic cavity. The severity of the symptoms is not an index of the amount of caries that will be found.

Middle-ear Suppuration in Infancy and Childhood.—According to S. J. Kopetzky (*Med. Rec.*, Feb. 29, 1908) the significant features of middle-ear suppuration in infancy and childhood lie (1) in the existence of the purulency without perforation; (2) in the presence of a discharge from the Eustachian tube to the pharynx; (3) in the exhibition of temperature, early facial paralysis and marked disturbance of stomach and bowel; (4) in the advent of periosteal abscess; (5) in the rapid progress of destructive processes in the petrous bone; (6) in the tendency to intracranial complications; (7) in the possibility of early primary bulbar thrombosis; (8) in the existence without thrombosis of otitic pyemia, and (9) in the relatively serious sequelæ of certain forms of ear disease in the child, who is exposed to

the danger of deafmutism by the loss of a special sense so intimately related to the function of speech.

Gastro-intestinal Symptoms of Middle-ear Suppuration.—Louis Fischer (*N. Y. Med. Jour.*, Feb. 29, 1908) calls attention to the fact that, like other infections, an infection of the middle ear frequently causes gastric or gastro-intestinal disturbances. These are simply toxic manifestations of the ear trouble. They are accompanied by marked fever, from 101° F. to 105° F. with a pulse which may reach 130 or 140. In bottle-fed infants the clinical manifestations are usually more intense than in the breast-fed. The gastric symptoms will continue in spite of dieting and eliminative treatment. An examination of the blood may give evidence of obscure suppuration. In all such cases examination of the ear should be as much a routine measure as that of the urine.

Indications for Surgical Treatment of Suppurative Middle-ear Disease in Infancy and Childhood.—Felix Cohn (*N. Y. Med. Jour.*, Feb. 29, 1908) says that paracentesis is indicated in every form of perforative inflammation of the ear and in every doubtful case. He also formulates the following indications for perforating the mastoid: (1) The mastoid should be opened in all cases of diagnosed osteitis, if under the usual antiphlogistic treatment the inflammation shows no tendency to resolution. (2) In pronounced cases of otitis media, complicated by antral empyema, in which the discharge is purulent, and shows no tendency to evacuate through the middle ear. (3) In all cases of prolonged otitis with profuse otorrhea which show no tendency to resolve within a reasonable period, the time chosen for operation depending upon the manifest symptoms, whether, for instance, retention is present or the mastoid bone itself is involved. (4) In every case of acute otitis, in which there are dangerous symptoms of resorption, and in which the drainage cannot be established by paracentesis or by the natural perforation. (5) In all cases of muco-purulent otitis, in which the otitis is evidently maintained by the mastoid osteitis, the time for operation depending upon the condition of the patient and the presence or absence of symptoms pointing to retention or other complication of a serious nature. (6) In cases of protracted otitis, in which there are symptoms of serious secondary complications involving danger of extension of the inflammation inward toward the brain or to the sinus or downward, toward the neck. (7) In case of uncomplicated acute otitis, in which stenosis of the external canal prevents drainage and thorough cleansing of the middle ear.

Status Lymphaticus.—Sidney Phillips (*Clin. Jour.*, Feb. 12, 1908) records the death of a previously healthy boy five and a half years of age three days after the onset of severe dyspnea. The autopsy showed only enlargement of the thymus gland, simple hyperplasia of the mesenteric lymph nodes and hyperplasia of the Malpighian bodies in the spleen. Laryngeal

examination showed that the dyspnea was not due to laryngeal spasm; the autopsy demonstrated that it was not caused by pressure of the thymus. The writer thinks the case points to a toxic origin of the dyspnea, as is resembled what has been called uremic asthma.

Tracheo-bronchial Adenopathies in their Relations to Chronic Pulmonary Tuberculosis in Infants.—Charles Leroux (*Archiv. de Med. des Inf.*, Feb., 1908) gives the result of a study of the relations of pulmonary tuberculosis in children to bronchio-tracheal adenopathies which includes the observations of over five hundred children. He finds that there are two modes of origin for chronic pulmonary tuberculosis. It may begin in the glands and extend to the lungs, or it may begin in the lungs and extend to the glands. The question of age has an important bearing on the method of origin. From two to five years the glands on only one side are involved, and they become bilateral as the child's age advances. From six to ten years of age they are generally found to be bilateral. It is also in these later years that the primary pulmonary tuberculosis of the apex begins to be observed, while it is very rare in the nursing infant. Evolution of the glands varies; cure is observed only after a prolonged sojourn at the seashore and a short stay is useless. Radioscopy shows in rare cases an entire disappearance of the glandular enlargements. They may calcify or atrophy. If these children remain in unhygienic surroundings they die of some form of tuberculosis. The entry of the germs occurs in three ways. The most frequent is the pulmonary. A descending lymphatic origin by infection of the rhino-pharynx or skin is rare. An ascending entrance by way of the lymphatics from the digestive tract is also rare. Gross pulmonary signs at the apex, such as expiratory blowing sounds, are sometimes caused by pressure of enlarged glands while slight sounds may result from tuberculosis of the apex.

Fetid Non-gangrenous Bronchitis.—E. Gaujoux (*Ann. de Méd. et Chir. Inf.*, Jan., 1908) believes that there is a fetid bronchitis of infants that differs from that of adults in that there is no gangrene of the lung. Bronchial dilatations are rarely found in children. Clinically we should distinguish several forms of fetid bronchitis. There is a bronchitis of acute nature that is cured in a week or so, in which the characters are those of acute bronchitis except that as the expectoration becomes looser it becomes fetid in odor. In such infants as are too young to cough the sputum is swallowed and causes diarrhea. The sputum separates into three layers, but no elastic fibers are found in it, as would be the case in gangrene of the lung. In young infants the disease is much more severe, the temperature high, and the symptoms septicemic. The chronic form goes on to a fatal termination in many cases. When the disease reaches the small bronchioles death occurs. The lesions are those of a simple bronchitis and the fetidity is

due to stagnation of the muco-purulent secretions. It has not been as yet ascertained whether there is any specific bacterium that causes the fetidity. It coexists with gastro-intestinal troubles, and with adenoid vegetations. The secretion of toxins causes the fever and loss of flesh. The treatment of the condition consists in the use of expectorants to cause the throwing off of the expectoration, and of balsamics to disinfect it. Fresh air and tonic remedies are important.

Plastic Bronchitis.—A girl eleven years of age is reported by Samuel West (*Lancet*, Feb. 15, 1908) as having had six previous attacks of plastic bronchitis in four years. Examination of the chest during the seventh attack showed a greatly impaired percussion note over the whole left side, back and front, and at the base behind it was almost dull. The vocal resonance and breath sounds were absent everywhere except in the left inter-scapular space, where they were somewhat exaggerated. The apex beat was an inch to the left of the left nipple line in the fifth space, and the resonance of the right lung extended across the sternum and reached an inch to the left of the edge of the sternum along the third rib. A cast of the left main bronchus two and a half inches long with a stem nearly one-third of an inch in diameter was coughed up and the temperature fell from 103° to 99.8° . The apex of the heart returned to the left nipple line—i.e., moved two inches towards its proper place. The upper part of the left lung became resonant and the breath sounds were distinct and with a little crepitation, dulness and absence of breath sounds persisting at the base. Several large and small casts were expelled at intervals during the next three weeks, the same change in physical signs and temperature occurring each time. Recovery.

Arteriosclerosis in the Young.—F. Fremont Smith (*Amer. Jour. Med. Sci.*, Feb., 1908) reviews the literature of this subject and calls attention to the fact that the rôle of congenital syphilis has apparently been overestimated in youthful cases. The part which the acute infections play in the production of focal necroses, preparing the soil for future gross lesions is usually overlooked. He quotes one report, by Wiesel, upon 80 cases of infection, including 20 of scarlatina and twenty of diphtheria, in all of which degenerative changes in the vascular system were found.

Peripheral Phlebosclerosis in Childhood.—Speaking chiefly of children between the ages of four and fifteen years, C. F. Martin and J. A. C. Tull (*Arch. of Ped.*, Mar., 1908) say that clinical and histological observations show the frequent occurrence of peripheral phlebosclerosis especially in the veins of the lower extremities and most often in the saphenous veins. The lesions are, in most cases, hyperplasia of the intima and media without round-cell infiltration but with hyaline degeneration. The cause of this condition is unknown and it gives no clinical symptoms. It is found in healthy children who have had no

previous prolonged illness as well as in those with infectious diseases.

Acute Meningitis of the Convexity.—In discussing the clinical report by Josephine Hemenway (*Arch. of Ped.*, Mar., 1908) of two cases, in one of which an autopsy showed a pneumococcus infection of the meninges, L. E. Holt says that acute meningitis of the convexity is usually due to the pneumococcus; and, furthermore, in all cases of pneumococcus meningitis the lesions at the convexity are usually the most marked. This occurs apparently as a primary disease and also as a sequel to pneumococcus lesions elsewhere in the body—generally pneumonia. When the lesion is confined to the convexity many of the nervous symptoms commonly associated with acute meningitis, but which are due to basal lesions, are wanting, *e. g.*, cervical opisthotonus, bulging of the fontanel and the characteristic disturbance of pulse and respiration. The rigidity, hyperesthesia and increased reflexes of acute cerebrospinal meningitis may also be absent. Lumbar puncture may give negative results whether made either early or late in the disease. The nervous symptoms present are usually of a general character—convulsions, irritability, nystagmus, delirium, stupor, etc.—followed, if the case survives the acute stage, by symptoms largely mental and which are difficult to recognize in young infants.

Serum Treatment of Epidemic Cerebrospinal Meningitis.—C. H. Dunn (*Bost. Med. and Surg. Jour.*, Mar. 19, 1908) has used Flexner's antiserum in fifteen cases of epidemic cerebrospinal meningitis, in all but one of which the diagnosis was confirmed by the finding of the diplococcus intracellularis in the cerebrospinal fluid. Of these cases, eight have resulted in complete recovery, two have resulted in death and five are still pending. The eight cases which recovered are all perfectly well, having been left with no sequelæ of any kind, an unusually favorable result in this disease. The two fatal cases were both chronic cases, in which the disease had run considerable time before coming under observation. Of the five cases which are still pending, four are now convalescent and will undoubtedly recover; the other is a chronic case, in which the outcome is dubious. Every one of the eight cases to which the serum was given in the first week of the disease has resulted in complete recovery, and of the pending cases, two in which the antiserum was given early, are convalescent. The two fatal cases were in children who had had the disease for several weeks and were already in the chronic stage when first seen. Both were unconscious, with normal temperatures, although in both there were a few organisms to be found in the cerebrospinal fluid. The other unfavorable case was an adult in whom the disease had existed for three weeks. The continuance of symptoms in this case was probably due to organic lesions in the brain, causing permanent drainage although the infectious process itself had ceased. In four of the cured cases there was an immediate and

permanent fall of temperature, exactly resembling the crisis of a pneumonia, which was accompanied by a complete and permanent return of the mental condition to normal, complete and permanent disappearance of headache, and followed by rapid disappearance of rigidity of the neck and all other signs. Two of these cases, in twelve hours after the first dose, returned from a condition of complete unconsciousness to one of absolutely normal mental condition. In the other four cases, the temperature fell to the normal by a fairly rapid lysis, accompanied by rapid improvement in the mental condition and disappearance of symptoms and signs. The serum was given intraspinaly in doses of 15 to 45 c.c., usually 30 c.c., after withdrawing the cerebrospinal fluid. The completeness of the recovery in the cases reported is an important feature. The most important point suggested by the results of the use of the Flexner serum, in this series of cases of epidemic cerebrospinal meningitis, is the advantage to be gained by giving it early in the course of the disease. If, after one dose, the temperature falls to the normal and the symptoms show rapid and progressive improvement, no further dose of antiserum may be necessary, but the physician should be ready at any time to repeat the treatment, if the temperature begins to rise or if the symptoms show a tendency to recur. Relapses do occur and should be treated exactly as the original attack. If the temperature does not come down to the normal, or if the symptoms do not show progressive improvement, the treatment by lumbar puncture and the injection of antiserum should be repeated daily for three days, making four doses in all. After this time further injections may be made, as indicated by increase at any time of fever or symptoms. In those rare cases in which no fluid can be withdrawn by lumbar puncture, it is questionable how safe it is to inject antiserum into the canal. It would be worth while in these cases to try subcutaneous injections. Late cases afford a prospect of benefit, if there is still fever and evidences of an active infectious process or if there are still organisms to be found in the cerebrospinal fluid. The effect is less immediately noticeable and recovery much more prolonged. Cases which have passed into the chronic stage without fever and with no organisms to be found in the fluid are not influenced by the antiserum.

Cerebrospinal Meningitis.—W. R. Sterner and C. B. Ingraham (*Amer. Jour. Med. Sci.*, Mar., 1908), in studying 145 cases of cerebrospinal meningitis found twelve possible cases of contagion, confirming the view that the disease is only mildly contagious.

Kernig's Sign in Infancy.—Analyzing 2000 cases J. L. Morse (*Arch. of Ped.*, Mar., 1908) concludes that Kernig's sign is almost never found in infancy, either in health or disease, except in meningitis. It is found so rarely in other diseases at this age that its presence in an acute disease justifies, as far as any

one sign can, the diagnosis of meningitis. It is never present, however, in some cases, and in many others it is present only intermittently. It occurs with equal frequency at all stages of the disease. It has no apparent connection with the degree of intracranial pressure. It is more often present when the knee-jerk is increased than when it is diminished. It is of no value in the diagnosis between the tuberculous and cerebro-spinal forms.

Acute Poliomyelitis.—W. Pasteur, A. G. R. Foulerton, and H. Maccormac (*Lancet*, Feb. 15, 1908), having identified a micrococcus in the spinal fluid withdrawn during life from a boy with symptoms of acute poliomyelitis, have succeeded in producing an ascending motor paralysis in the rabbit, after a prolonged period of incubation, by inoculating this fluid into the subdural space. On the death of the experimental animal they were able to demonstrate in the cerebrospinal fluid a micrococcus similar to that seen in the fluid from the human case; and by inoculating another rabbit with an emulsion of cerebrospinal substance and fluid from the first experimental animal succeeded in reproducing a motor paralysis, again after a somewhat prolonged period of incubation, and again associated with the presence of the micrococcus in the spinal fluid. While they succeeded thus in obtaining direct evidence of the infective nature of the illness and of its association with a certain micro-organism, evidence is incomplete bacteriologically, since they failed to obtain the micrococcus in culture on artificial media. They suggest that there is not sufficient reason for assuming that acute poliomyelitis is always a result of this particular diplococcal infection. The symptoms by which acute poliomyelitis is recognized in clinical practice are the consequences of a constitutional alteration of certain cells of the central nervous system which causes an impairment of their functional efficiency. That this constitutional alteration is necessarily produced by only one specific cause appears highly improbable. They think rather that it is probable that the cell changes which result in the symptoms of acute poliomyelitis may be caused also by the toxins produced in other infective processes. They refer to the experience of Trevelyan, who found that out of fifty cases of infantile paralysis which he had treated the symptoms had followed immediately on measles in two cases, in one case had come on after typhoid fever, and in another case after acute rheumatic fever.

Orthopedic Therapy of Acute Anterior Poliomyelitis.—J. J. Nutt (*N. Y. Med. Jour.*, Feb. 29, 1908) believes that orthopedic treatment begun in the acute stage will often lessen the crippling result. The ultimate disabilities are due to the paralysis and to the deformities. The deformities result from unopposed muscular action, from asymmetry in development, and from weight-bearing in an abnormal position while the sustaining tissues have their motor and trophic centers paralyzed. The treat-

ment, therefore, before the chronic stage, should be directed toward: 1, Keeping the parts in as healthy a condition as possible; 2, the preservation of the normal range of motion in all the joints; and, 3, preventing stretching and elongation of paralyzed and weakened tissues. To keep the parts in as healthy a condition as possible, massage, electricity, heat and hydrotherapy should be employed. Normal range of motion at the joints should be preserved by passive movements carried out daily from the beginning of treatment. To prevent stretching of paralyzed and weakened tissues the extremities must be held in such apparatus as is necessary to overcome the action of opposing muscles except during the time that other treatment is being given. Unless this is done the prolonged stretching will lead to a condition simulating paralysis from cord lesion and permit contractures. Prolonged rest in bed does not seem the wisest treatment. After subsidence of the fever everything should be done to restore normal circulation and improve the general condition. The question will arise whether the support afforded by a brace to a weakened joint or muscle outweighs the confinement of other muscles, and must be decided for the individual case. If an apparatus is employed it must be removed twice a day and the muscles and joints which are confined exercised by passive and resisted active movements.

Pathogenesis of Acute Laryngostenosis in Measles.—Alfredo Villa (*La Pediatria*, Dec., 1907) describes an epidemic of measles which occurred in Genoa in 1905, in which 269 cases were observed. Of these cases 45 were the victims of an unusual complication, acute laryngeal stenosis. The stenotic symptoms occurred at three different periods of the disease; before, during, and after the eruption. Of the 45 cases of stenosis, 32 were before or during the eruptive stage, while 13 were observed during the convalescence, and were regarded as due to a recrudescence of the eruption in the laryngeal mucosa, or a reinfection. The appearances of the larynx indicated marked congestion of the mucous membranes and an exanthema involving the larynx and glottic region. There was no mixed infection present as there were no Klebs-Löffler bacilli found. In one fatal case a membrane was found in the larynx postmortem, which was examined and submitted to culture experiments. No growth of Klebs-Löffler bacilli was found, but staphylococcus pyogenes albus was present. This observation is of importance clinically, since if this condition is not due to the diphtheria bacillus it is wrong to place such children in a diphtheria ward and expose them to danger of a new infection.

Congenital Human Tuberculosis.—Maurice Pehu and Joseph Chalié (*Arch. de Méd. des. Enf.*, Jan., 1908) demonstrate by careful researches into literature and an analysis of all the cases reported, which number only thirty-five, that congenital tuberculosis is exceedingly rare. They set aside hereditary predisposition and take up only hereditary contagion. They

believe that the germs do not remain latent, but show themselves within one month after birth. Cases that have survived for several years should be eliminated as probably the result of infection by their surroundings. Its existence has been demonstrated by macroscopic and microscopic appearances and by examinations for the bacilli and inoculations into animals. It is necessary to exact certain conditions and most careful examination before we say that a case is undoubtedly one of congenital tuberculosis; the infant must be under one month of age; all possible methods of demonstration must be used; there must be a complete study of the lesions in the mother, the genital organs, placenta, umbilical cord, and the internal organs of the infant. A study of the condition of the father will give fruitful results. The differential diagnosis must be made between tuberculosis and syphilis, lobular bronchopneumonia, miliary abscesses, and early acquired tuberculosis. Maternal tuberculosis is in general manifest in life and at the autopsy; often the genital organs are involved. Contagion in utero occurs only after the establishment of the placental circulation. Placental tuberculosis is frequent. Hereditary tuberculosis attacks the liver, and becomes generalized through the other viscera. Pulmonary tuberculosis is rare and when no lesions are found there may have been a very late infection. Transmission of tuberculosis from the parents is exceptional. Children are not born tubercular, hence all infants should be protected against tubercular surroundings.

Tubercular Pericardial Adhesions and Cirrhosis of the Liver in Children.—Hutinel (*Bull. Méd.*, Feb., 1908) describes a disease which he calls cardio-tubercular cirrhosis. Here there is a primary tuberculosis of the bronchial glands or pleura which is propagated to the pericardium. A Pericarditis causes adhesions of the layers of the pericardium, so that the heart is bound down and the apex does not move with the beat of the heart. The principal symptoms are those that attract the attention to liver, the seat of hypertrophic cirrhosis. It becomes firm and much enlarged. Ascites sets in. No cardiac murmurs are to be detected. Cyanosis begins with violet-colored face like that of congenital heart trouble. Dyspnea and heart failure end the scene. The tubercular condition remains latent throughout but is demonstrated by autopsy. Treatment has thus far failed to prevent a fatal issue.

Surgical Tuberculosis in Children.—L. W. Ely and B. H. Whitbeck (*Med. Rec.*, Mar. 7, 1908) give a general outline of the histories of 76 cases of surgical tuberculosis in children from two to fourteen years of age treated at the Sea Breeze Hospital. Without attempting to give statistics, which are so misleading when cases for treatment are selected, they conclude that the seashore is the best place for treating children with tuberculous adenitis. The children make a better recovery here than elsewhere. Those with adenoids and enlarged tonsils should be sub-

mitted to an operation as a start of the cure. Sea air does not permit us to dispense with this. The seashore is probably the best place for children with tuberculous joints, provided they can have there the same skilled orthopedic care as elsewhere. Their disease runs a somewhat milder and probably a shorter course, and the functional results are better than those obtained elsewhere. The results have been largely due to the careful attention (including feeding and nursing) which has been given the children. Many cases of so-called bone tuberculosis are really syphilis. As to treatment other than diet and fresh air, the writers use plaster in preference to braces. In Pott's disease they use first the Bradford frame, then plaster jackets; in hip joints, the short Lorenz spica. In knee-joint disease after the acute stages, they also use plaster-of-Paris.

Vaccine Treatment of Gonorrheal Vulvovaginitis in Children.—W. J. Butler and J. P. Long (*Jour. Amer. Med. Assn.*, Mar. 7, 1908) record their results with a vaccine prepared from one and another from four cases of gonorrhea, no effort being made to isolate the gonococcus in each individual case. In determining the index they took the average phagocytic count of four healthy children as normal. The vaccinations were interspaced according to the index, making an effort, so far as possible, to give the patient the injection before an index declined below normal. The dosage varies in different cases, and can be determined only by investigating for each individual case the immunizing response to a given dose as indicated by the index. In four of the cases treated with vaccine the clinical evidences of gonorrhea disappeared in from ten days to three weeks, and the gonococcus was not to be found in smears made from wipings from the vaginal mucosa, taken at intervals of several days. Of the remaining eight cases, in all but three a cessation of discharge and disappearance of gonococci from smears was attained after several weeks of treatment. These results the writers contrast with those obtained in 12 cases in which local treatment alone was employed. In only three of these had the discharge disappeared after from 24 to 176 days of treatment, and in only one were negative smears reported.

Congenital Syphilis.—L. Tissier and Girauld (*Bull. de la Soc. d'Obst. de Paris*, Jan. 15, 1908) tabulate the examinations of 40 cases seen at the St. Louis Maternity and suspected of syphilis. The liver was examined when the child was dead, and the placenta when living. In no case of abortion were they able to find the spirochetes in the liver, although in fetuses of seven and eight months they were found. In macerated fetuses the spirochetes may disappear by a sort of auto-digestion. Eight times out of 21 macerated cases the authors found spirochetes in the liver. The presence of the treponema in the maternal or fetal placenta was generally lacking. Of the cases examined there were 9 abortions. One of these mothers was syphilitic and one was probably so, while seven were doubtful. There were 20

premature infants, dead and macerated. These mothers were undoubtedly syphilitic. In none of these cases were there any organisms in the placenta. In three others they were found in the liver. Among 7 living children spirillæ were present in two livers, none in the placentas.

Ophthalmia Neonatorum.—Stephen Mayou (*Practitioner*, Jan., Feb., Mar., 1908), having shown by sections of the eyes of three healthy fetuses at term that infection of the conjunctival sac is more liable to occur in the infant than later in life, owing to the deficiency of epithelium and to lack of development of the layers of protective lymphoid tissue, gives a list of twelve organisms which may cause the condition. In 40 cases examined by him the gonococcus was found in 23, staphylococcus in 8, Morax-Axenfeld bacillus and colon bacillus each in 2, pneumococcus and diplococcus intracellularis each in 1 case. In 4 no organism was discovered. Undoubtedly the gonococcus is by far the most common and most important, it being present in 63.5 per cent. of 1483 cases tabulated from the literature. Infection of the conjunctiva with this organism differs from that of the urethra in its greater variability as to severity, the mild cases probably being due to dried bacteria from soiled towels or those exposed to cold by immersion in water, and in the fact that a chronic inflammation comparable with gleet never occurs. The gonococcus is not only invariably present in the discharge throughout the presence of the latter, but has even been found 25 days after this ceased. Staphylococcus albus produced a mild ophthalmia; staphylococcus aureus in one case caused a severe attack. Pneumococcal infection though severe is of short duration. Bacillus coli gave a moderate discharge in one case, a profuse in another. The writer deprecates the use of vaginal douches before labor as diminishing the germicidal action of the vaginal secretion, unless there is known to be a pathological discharge. This being usually gonorrheal, an antepartum douche should be given. Infection of the conjunctiva may occur in utero even before rupture of the membranes, or during birth if the fatty Meibomian secretion fails to make the lids water-tight. Most often it takes place just after birth while washing the infant. Later it may occur from diapers, towels, etc., so-called "secondary" infection. Cases occurring after the third day may be classed as secondary. When the discharge is profuse, thick and creamy and later flocculent, especially if the cornea is affected, the infecting organism is almost surely the gonococcus. If the discharge is slight and the lid margins are red the Morax-Axenfeld bacillus is probably present, though a mixed infection with staphylococcus may give a purulent discharge. The diagnosis must always be made from congenital lachrymal obstruction with a large purulent mucocele. As a prophylactic, although bichloride of mercury seems as effectual, 2 per cent. solution of silver nitrate dropped into the conjunctival sac is most satisfactory. It should be neutralized with salt solution as there is no lachrymal secretion at birth.

As a routine treatment a daily painting of the lids and fornices with this and neutralizing with salt solution is best, washing out the conjunctival sacs every hour with 1:8000 bichloride solution. An unaffected eye must be protected by a shield. Irrigation must be continued for at least a month after the discharge ceases. A corneal haze represents the early stage of infiltration of the cornea with polymorphonuclear leukocytes and is the first warning of ulceration. If it appears the pupil should be dilated with atropin in addition to the usual treatment.

Postoperative Treatment of Adenoids.—B. de F. Sheedy (*Amer. Jour. Surg.*, Mar., 1908) considers the most important points in the postoperative treatment of adenoids to be keeping children in bed for from two to three days after operation, and away from other children; keeping the parts clean by use of alkaline washes and medicated mentholated oil solution; using constitutional and reconstructive medication; employment of thoracic gymnastics practised for a period of one to five years; use of oxide of zinc plaster over the mouth at night to keep the mouth closed until normal breathing is established, and watching for return of the growths.

Caloric Value of Modified Milk.—From a study of 20 cases Maynard Ladd (*Arch. of Ped.*, March, 1908) concludes that:—
1. The calories in the food of an infant in the first year of life cannot be furnished by the fats, sugar and proteids vicariously if the best results of substitute feeding are to be obtained. 2. The number of calories required increases in each quarter of the year. In this series of 20 cases, the average number of calories ingested each day was for the four periods—483, 666, 860 and 1,018—while the corresponding energy quotients were 116, 126, 125, 120. 3. A given number of calories per day does not necessarily cause the same rate of growth in infants, even if they are of the same age and development. 4. A food of a given energy quotient does not necessarily cause the same rate of growth in infants, even if they are of the same age and development. 5. The caloric value of the food expressed either in terms of the number of calories ingested daily or as the energy quotient is not the most important consideration in determining the quality of an infant's food. The nutrition of an infant depends primarily upon its power to digest and assimilate milk. These functions are best served by modifying the percentages of the constituents of milk so as to adapt the food to the individual needs of the infant. In a given case, neither the number of calories nor the energy quotient of the food can be positively determined by rule, but, like the fats, sugar and proteids in percentage feeding, must be ascertained by experiment. The calculations of calories and energy quotients in connection with percentage feeding can be easily made, but they add nothing in the way of information which cannot be obtained by careful observation of the gastric and intestinal functions and the weekly gain in weight.

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ORIGINAL COMMUNICATIONS.

PYELITIS IN PREGNANCY AND THE PUERPERIUM.*

BY

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PYELITIS in pregnancy and the puerperium has of late years deservedly been attracting a great deal of attention. It is interesting to trace its history. As far as I can learn from a study of the literature, the first mention of the disease is to be found in Rayer's work, *Traité de maladies des reins*, published in 1841. He says, "Le développement de la matrice dans la grossesse est une cause fréquente de la cystite de distension renale et par suite d'inflammation des ureteres des bassinets et des reins." Thereafter the subject seems to have fallen into oblivion until 30 years later when Kaltenbach (*Archiv f. Gyn.*, Vol. iii, page 1), in writing of a case of pyelitis in 1871, says as follows: "Acute pyelitis in pregnancy has not up to the present time received any attention from any quarter and is of especial interest in that it may be observed in an analogous manner in the puerperium and after gynecological operations."

W. M. Chamberlain (8) gets the credit with some writers of having written about the disease in this country in 1877. He writes: "The urinary tract in its whole length is especially liable to share in any and every morbid process which may follow childbirth and that the disease of the urinary tract thus excited has a very marked influence upon the issues of the puerperal state, and sometimes assumes the leading rôle among the causes of death."

This scarcely can, however, be accepted as a recognition of

* Read before the New York Obstetrical Society, April 14, 1908.

pyelitis either in pregnancy or even in the puerperium. It signifies, to my mind, that the author recognized that the bladder, ureter and kidneys may become affected in puerperal sepsis.

In 1889, twelve years later, Kruse (20) wrote a dissertation on the subject on the basis of a case observed in the Charité at Berlin, but made no mention of the previous writers. This paper failed also to excite any interest, and it was not until 1892, three years later, when Reblaub (35) presented his communication to the French Surgical Congress, reporting, in clear outlines, five carefully observed cases, that the interest of the medical world became fully aroused to the importance and entity of the disease.

To the President of this Society, Dr. E. B. Cragin (9), the credit must be given for presenting the subject before the profession in this country by his clear, concise paper read before the American Gynecological Society, May 24, 1904, and published in the *Medical Record*, July 16, 1904.

Frequency.—Opitz (30), in 1905, was able to collect in the literature only 76 cases and published eight cases of his own, making 84 cases in all. Since the paper by Opitz I have been able to find 123 cases recorded in the literature. Of these 52 are reported by Albeck (3) from the Copenhagen Maternity. Albeck states that the disease is often to be met with during labor, when it is frequently masked by the labor pains. He asserts that pyuria is not an infrequent accompaniment of pregnancy and parturition. In the Copenhagen Maternity the urine of every inmate is carefully examined on admission and if it shows the slightest trace of albumin it is subjected to a thorough microscopic examination. It is then examined every second or third day during the patient's stay in the hospital. From 1900 to 1905 there were 7648 parturient women, and pyuria was observed in 450 cases (5.86 per cent.), of these 6.56 per cent. occurred in primipara and 4.84 per cent. in multipara. That the disease occurs much more frequently than the recorded cases would indicate may be safely assumed, as it is far from being generally recognized by the profession at large. The records of the Copenhagen maternity, however, may be taken as a fairly safe guide of the frequency of the disease.

Etiology.—For the causation of pyelitis in pregnancy two conditions are generally assumed to be essential: (1) obstruction in some part of the urinary tract and (2) pathogenic bacteria. That the pregnant uterus frequently compressed the ureters and

brought about their dilatation was already known to Cruveilhier. He stated, "I have observed that the ureters were found markedly dilated in all of the women who died right after confinement or during the latter months of pregnancy." Since his time a number of good observers have noted the same condition, notably Olshausen, Halbertsma (17), Sippel (41) and others. These observers have found that the dilatation was most frequently met with in the right ureter. Pollack (33) in 130 autopsies in eclamptic cases in the Vienna Hospital from 1881 to 1902 found dilatation of the ureters in 35 cases (26 per cent.). In 18 of these cases both ureters were dilated. In the remaining 17 cases the right ureter only was found dilated. This coincides with the clinical fact observed in pyelitis in pregnancy that the right kidney is by far the one most frequently affected. The explanation of this is to be found in the anatomical relation of right ureter as it crosses the brim of the pelvis making more of an acute curve and lying more exposed than the left ureter. Another factor tending to compression of the right ureter is the position of the pregnant uterus itself, lying as it does more frequently in the right oblique diameter of the pelvis. The greater frequency of the fetal head occupying the right oblique diameter is stated as still another factor favoring pressure upon the right ureter. The occurrence of pyelitis in the early months of pregnancy militates against the view that the fetal head plays any rôle in the causation of the compression of the ureter. Cathala (7) holds that the compression is brought about by the traction exercised upon the ureters by the inferior uterine segment as it rises up in the pelvis. Other observers maintain that the pressure upon the ureters is caused by the lower segment of the enlarged uterus. It is assumed that the mucosa of the ureter partakes of the general hyperemia of the pelvic organs attendant upon the pregnant state, and in consequence a slight pressure or a slight traction of the ureter would be sufficient to partially close its canal and thus obstruct the current of urine. It has been demonstrated by experiments on the lower animals that the urine flows through the ureter under very low pressure. Englemann and Bouvin* have shown that a pressure of 5 mm. upon 8 mm. length of the ureter is sufficient to arrest a column of urine in the ureter of 400 mm. in height. They have further shown that on continued pressure upon the ureter the peristaltic waves issuing from the kidney are arrested at the point of pressure and

* Cited by Mirabeau.

that the ureter below this point does not partake of the peristaltic movements. Mirabeau (27) brings forth a novel view regarding the cause of the obstruction of the flow of urine in the upper urinary tract. He rejects the views hitherto held, and asks, if they are correct, what explanation can be offered for the enlargement of the pelvic portion of the ureter. He maintains that the obstruction to the urinary current is brought about by the changes of the bladder mucosa incident to pregnancy. He has found on cystoscopic examinations during pregnancy that the bladder mucosa, especially that surrounding the ureteral orifices, undergoes marked hypertrophy forming a wall-like obstruction to the flow of urine from the mouths of the ureters. This obstruction he deems sufficient to bring about a stagnation of the urine in the ureters and pelvis of the kidney. Gauss (14) confirms these observations from a cystoscopic study of the bladder in several pregnant women. Prior to these observations Stöckel* had already drawn attention to the changes of the bladder wall that he had noted in the puerperal state which consisted in an edema of the bladder mucosa, especially that about the neck of the bladder, and in numerous ecchymoses in the same region. He attributed these changes to the traumatism to which this portion of the bladder was subjected to during labor. We have seen that, although there is a diversity of opinion as to how the obstruction of the upper tract is brought about, all agree as to the existence of the obstruction.

There are three recognized modes of infection: (1) Ascending from the bladder; (2) through the blood-current—*i. e.*, descending from the kidney; (3) through the lymph-channels. The latter may practically be excluded from the present topic as it has reference to the extension of a purulent process in the neighborhood of the urinary tract. The hematogenous infection or the descending infection finds most of its adherents among the French authors, while the German authors are more inclined to favor the view of an ascending infection. Nearly all agree that the infecting agent in the vast majority of cases is the colon bacillus. Albeck (3), who has made an especial study of the bacteria in the pyuria of pregnancy, has found that in 55 cases of bacteriuria the colon bacillus in pure culture was found 43 times, the streptococcus 9 times and the staphylococcus albus 3 times. This vast preponderance of colon bacillus infection corresponds in the main with the data furnished by other observers. Len-

* Cited by Mirabeau.

hartz (23) in 80 cases of pyelitis (19 of which occurred in pregnancy and the puerperium) the colon bacillus was the only micro-organism found in 66 cases.

For some time past, however, as a result of some of the incidents connected with the cases that have come under my own observation, I have thought that the gonococcus played a not inconsiderable part in the causation of the pyelitis in pregnancy and in the puerperium. For example, one of my patients (Case XI) went through an acute gonorrheal cystitis (gonococci were found in the urine) about nine months before she became pregnant. I was naturally anxious throughout her pregnancy, which progressed to term without incident. Labor was uneventful, she was having an afebrile puerperium, but on the twelfth day she was seized with a chill followed by fever and with severe pain over the left kidney and she went through a moderately severe attack of pyelitis lasting about two weeks. The pyuria persisted for sometime afterward, but finally disappeared completely. Numerous bacteria were found in the urine, but none of a definite nature. Two additional cases in my series of cases presented evidences of prior gonorrheal infection. It was therefore gratifying to me to find that Mirabeau, in an excellent article in 1907 as a Festschrift to Professor von Winckel, has arrived at the same conclusion. He divides pyelitis of pregnancy into four varieties, according to the infecting agent: (1) Gonorrheal infection; (2) pus cocci infection; (3) colon bacillus infection; (4) tuberculous infection. He holds that each presents a distinct clinical picture and runs a characteristic course. The evidence he adduces is rather convincing and is based on ten cases coming under his own direct observation and a number of others in whom he had made a cystoscopic examination.

Gonococci were found in the urine from the kidney by Mirabeau (27), Opitz (30), Schwab (40), Gaussel (15) and Fournier (12).

That gonococci have not been more frequently found is, no doubt, due to the fact that that organism is not so easily detected in the presence of other bacteria. Where marked bladder symptoms precede the kidney symptoms, gonorrheal infection should be suspected.

The right kidney is the one affected in the vast preponderance of cases. In 135 cases collected by Opitz (30) and the writer the right kidney was affected 91 times, the left kidney 22 times, both kidneys 10 times and 10 times it was not stated which kidney was involved.

Contrary to what some writers have stated, there is no preponderance of cases among primigravidæ. In 66 cases in Opitz's (30) collection there were 32 primigravidæ and 34 multipara.

In the majority of cases the disease sets in during the latter half of pregnancy. In 161 cases comprising Opitz's series and the writer's the onset of the disease was four times in the third month, 10 times in the fourth month, 29 times in the fifth month, 28 times in the sixth month, 29 times in the seventh month, 18 times in the ninth month and 24 times in the tenth month.

Symptoms and Course.—In practice one meets with two varieties, differing chiefly in the onset. In one there is a preliminary period, of longer or shorter duration, of bladder disturbances characterized by frequent and painful micturition, with some tenesmus and a sense of burning over the bladder region. In addition there is more or less malaise. In the other variety the onset is sudden, resembling an acute infection ushered in by a chill and followed by marked elevation of temperature. The chill may be repeated daily and the morning and evening temperatures show marked remissions from 97° to 104° . The pulse will vary from 90 to 110 and 120, but the rapidity of the pulse, as a rule, bears no ratio to the elevation of the temperature. Still the patient makes an impression of being seriously ill, the tongue is coated with a heavy fur and may be dry; there is loss of appetite, nausea and even vomiting may be present. At first the pain is not localized but is diffused over one-half of the abdomen, usually the right, but in the course of a few days the pain becomes localized over the region of the affected kidney, which as we have seen is usually the right kidney. The kidney, as a rule, is not found enlarged, but deep pressure over the affected region will elicit marked tenderness. To be able to carry out this procedure it is often necessary to place the patient in a favorable position; that is, in a semi-prone position, half-way between the side and back, with the knees moderately flexed. The patient is then requested to take a deep breath and pressure is applied over the region of the kidney by the fingers of one hand just in front of the muscles of the back and the fingers of the other hand below the rib border in front. Tenderness on pressure over the McBurney point or, in other words, over the point where the right ureter crosses the iliac vessels is a symptom which is described by many writers. The writer did not find it in any of his cases. On the other hand, on vaginal examination thickening

and tenderness of the ureter as it crosses the anterior wall of the vagina is present in a certain number of cases.

The urine at the beginning may show no change beyond a trace of albumin and a rather high color. In the course of a day or two, however, it will present the characteristic features. The specific gravity will vary from 1006 to 1020, the reaction will be acid, and the odor pungent; it will be turbid when first passed, but on standing a thick sediment will deposit. This on microscopic examination will be found to consist chiefly of pus, a few red blood-corpuscles, numerous caudate epithelia, a few hyaline granular casts and numerous rod-shaped bacteria. On bacteriological examination the colon bacillus may be found in pure culture, rarely mixed with streptococci or staphylococci, and in a certain percentage of cases the latter cocci will be found alone. In a few cases the gonococcus of Neisser will be the only organism found. The quantity of pus will vary in the different specimens passed in the 24 hours. Coincident with a heavy deposit of pus there is usually a subsidence of the fever and the pain for obvious reasons. It may sometimes happen that the urine will be free from pus for an entire day, showing that the obstruction to the flow of urine from the affected kidney has for that period become complete.

According to Mirabeau (27), each infecting microorganism presents a clinical picture of its own. In gonorrheal infection, about the fifth or tenth week of pregnancy he says there will be bladder disturbances, manifested by a burning sensation in the bladder and urethra, frequent micturition with tenesmus, difficulty in voiding, and pain particularly at the end of the act, to a mixture of mucus, and scanty leucocytes, which may show Neisser's diplococci. These symptoms do not persist for a very long time. Later, dull aching pain is felt in both sides, which the patients attribute to stretching of the uterine ligaments, but which in reality are due to an inflammatory irritation of the ureters. Then, after a shorter or longer interval, during which the bladder symptoms have been entirely forgotten, there develops suddenly high fever with abdominal pain which soon becomes localized to the region of one kidney and later the pain is felt also in the other kidney. In these cases the right kidney need not to be the one most frequently involved, and in a large percentage of cases both kidneys become affected in the course of the illness. In this acute stage of the illness the urine appears

turbid, without depositing on standing a heavy sediment of pus. The reaction is neutral, the sediment shows, in addition to numerous epithelia from the ureters and pelvis of the kidney, numerous leucocytes, a few Neisser's diplococci, pus cocci and rods. The quantity of urine is markedly diminished, the specific gravity is rather high and the percentage of albumin corresponds to the quantity of pus. On cystoscopic examination the bladder will show, in addition to the usual changes attendant upon the pregnant state, those which are characteristic of gonorrheal infection—inflammatory areas localized at the trigonum and neck of the bladder. The acute symptoms in this form of infection usually subside after a time. Recurrences during the subsequent course of pregnancy are common. During the puerperium there may develop symptoms showing that there is a gonorrheal ascending infection of the genital organs.

I have quoted Mirabeau rather at length because in my opinion his description is founded on correct observations and corresponds, in a measure, with that I have made for myself.

In the cases due to colon bacterial infection the onset is preceded or accompanied by intestinal disturbances, such as diarrhea or obstinate constipation. It is in this variety that in the vast majority of cases the right kidney is the one affected. The urine may not show any change for two or three days, and during this stage a diagnosis is not easily made. But when the changes do occur they are characteristic of colon infection. The urine has a milky turbidity and does not become clear even after standing and after a sediment has formed. The sediment consists chiefly of pus corpuscles and numerous bacilli which prove generally to be a pure culture of the colon bacillus.

According to some French authors, there is a presuppurative stage, in which the urine is free from pus but loaded with bacteria.

Bar (4) reports a couple of obscure cases of fever, emaciation and ill health which he attributes to bacteriuria. Albeck (3), on the other hand, has frequently met with bacteriuria which was not attended nor followed by any grave consequences. In 392 cases of pregnancy he found bacteriuria 32 times unattended by any symptoms. The organisms found were the colon bacillus 24 times, the streptococcus 7 times and the staphylococcus albus once. Bredier (6), in 1902, described a form of pyuria without fever, Albeck (3) met with it 18 times in the routine examination of 392 pregnant and parturient women. Bredier (6) states that this form usually sets in at the end of pregnancy in contra-dis-

tion to the acute febrile form which develops generally at about the middle of gestation. He states further that if we were to put all the cases of pyuria without fever into one group we would find various clinical pictures, cases in which there is severe pain referred to the kidney and ureter and, on the other hand, cases in which the only symptom is the pyuria and which owes its detection merely to the routine examination of the urine of the pregnant woman.

During the past summer I had a case (Case XIII) in my practice of this variety that caused me unnecessary alarm. The young woman had a very bad tubercular family history and she herself manifested suspicious symptoms of pulmonary tuberculosis before she became pregnant. When her pregnancy (which was her first) had advanced to the ninth month the urine showed a marked trace of albumin and microscopically numerous pus corpuscles. There was an entire absence of fever, pain or urinary symptoms. I feared a tubercular affection of the kidney. The pyuria persisted without any other symptoms until delivery which was at time and was normal, as was the puerperium. The pus in the urine gradually disappeared after the delivery and with it the trace of albumin. The health of the patient has remained good up to the present time.

Diagnosis.—With the knowledge we now possess of pyelitis in pregnancy and the puerperium, its diagnosis ought not to be difficult; still it is rare that the medical attendant makes the correct diagnosis. Acute appendicitis, acute cholecystitis, typhoid fever, acute salpingitis, retained dead fetus and pleurisy have all been mistaken for the disease in question.

Acute Appendicitis.—This is the disease which is most frequently diagnosticated for pyelitis in pregnancy. In one case I had great difficulty in convincing a colleague whose wife had pyelitis in the second week of the puerperium that it was not a case of acute appendicitis requiring immediate operation. The history pointed to a gonorrheal infection of the bladder shortly after marriage. If we bear in mind that acute appendicitis is rather rare in pregnancy (*vide* article by the writer, page 843), that it is seldom ushered in by a chill, and followed by daily chills with marked remission in the fever course and that urinary symptoms are absent, we will seldom make the mistake. It is true that in pyelitis pain and tenderness over the McBurney point may be present, but by the time the pain has become localized at this point, there is also localization of the pain over the

corresponding kidney region. Further, the urine by this time will show its characteristic features. Another aid in the differential diagnosis will often be found on vaginal examination when the pelvic portion of the ureter of the affected side will be found thickened and tender where it crosses the anterior vaginal wall to enter the bladder. A cystoscopic examination is of considerable value in this regard, according to Mirabeau (27) and others. The error most frequently committed by the medical attendant is that he only thinks of the nephritis of pregnancy and gives no thought to an inflammation of the pelvis of the kidney.

Acute Cholecystitis.—The pain in this affection is usually characteristic, being referred, as a rule, to the epigastric region and shooting through to the back. On close questioning it will be learned that there have been similar attacks before pregnancy had set in. The point of greatest tenderness will be in the right hypochondrium and not in the right lumbar region.

Typhoid Fever.—Pyelitis in pregnancy sometimes has some features in common with the onset of typhoid fever. There is the preceding malaise, then the sudden development of high fever, preceded by one or more chills and the comparatively slow pulse. In cases presenting such features a positive diagnosis must be deferred for a couple of days or even longer. I recall a postpartum case seen with Dr. Mendel. There were some urinary symptoms present in the case, such as dysuria and a small amount of pus. Still the impression made upon me was that we were dealing with a case of typhoid fever. The patient was admitted into Mount Sinai Hospital. The first couple Widal tests were negative, later they became positive. The patient went through a moderately severe course of typhoid fever and her urinary symptoms were found to be dependent upon a cystitis.

It is not necessary to enter into the differential diagnosis of the other affections mentioned.

In pyelitis of the puerperium the differential diagnosis is not so easy, as pyelitis may only be one of the processes in puerperal septicemia. For instance, in a case observed by me of severe septicemia following criminal abortion there was a marked double pyelitis. Such a complication in puerperal sepsis or septicemia has been recognized for a long time and no doubt was what Chamberlain had in mind in the paper already referred to. Hence, to diagnosticate the pyelitis of the puerperium one must be able to exclude positively a general puerperal infection. This

can readily be done in some cases, in others the diagnosis may have to remain in doubt for a time. In the two cases, the reports of which are appended to this paper, I found no difficulty in excluding puerperal septicemia.

Prognosis.—The prognosis, so far as the mother is concerned, is, as a rule, good. In the majority of the cases the disease under appropriate treatment runs its course from 7 to 14 days. But not a few cases show no such limitation, the disease persists until pregnancy is interrupted artificially or spontaneously, or relief is afforded by purely surgical measures. In one of my cases (Case IV) the affection ran a very acute course for several weeks until abortion set in spontaneously.

Recurrences in the same pregnancy have been observed by several writers. Recurrences in subsequent pregnancies have been recorded by Barth (5).

One of my patients went through a subsequent pregnancy two years after the attack without any recurrences. Another patient went through two pregnancies subsequently with the same results. Several similar cases are recorded in the literature. Still it is not safe to allow a woman to become pregnant again shortly after having passed through an attack. The urine should remain entirely free from pus or bacteria for months before she should be permitted to run the risk of another pregnancy. Deaths have been recorded by Perret (32), Guyon, P. Müller (2 cases), Cumston (10) and Halle. I doubt very much, however, if this is a true indication of the mortality. A number of the cases recorded in the literature passed from observation while there was still considerable pus in the urine. The subsequent fate of these cases is unknown. The prognosis for the child in utero is not very good, as the pregnancy is interrupted either artificially or spontaneously in a fair percentage of the cases. In 32 of the cases the writer collected in only 17 did the pregnancy progress to term.

Treatment.—This consists in rest in bed, an ice-bag over the affected kidney, milk diet, a moderate quantity of water, lying on the opposite side to that of the affected kidney and the administration of some urinary antiseptic, preferably urotropin. Helmitol is highly spoken of by some writers. Opiates in some form may be necessary for the relief of pain. If this treatment fails to give relief or the disease runs a very acute and protracted course in spite of the treatment, the question of interrupting the pregnancy or surgical intervention on the affected kidney

will come up. In many cases nature will decide the question herself by bringing on a spontaneous abortion. In the other cases most obstetricians will decide in favor of artificial interruption rather than to a nephrotomy. Still there are cases in which drainage of the kidney would be indicated, such as cases of pyonephrosis.

Barth makes a strong plea in favor of nephrotomy. He reports a couple of cases and the pregnancy progressed to term, the labor and puerperium were normal, the urinary fistula in the loin closing a short time after delivery. In other cases he is in favor of inserting a catheter into the ureter of the affected side so as to give free drainage to the pus. He treated a few cases in this way with happy results. He is opposed, and rightly I think, to irrigating the pelvis of the kidney through a urethral catheter. One of our cases (Case IX) in Mount Sinai Hospital had been treated in this manner before being transferred to our service for induction of labor. After she had been discharged from the hospital she had an acute attack necessitating her readmission. She was then operated upon and a large collection of pus was found in the ureter. Whether the attempt to irrigate the pelvis of the kidney contributed to this result it is difficult to say, but it certainly did not benefit the patient.

Pasteau (31), and other French authors speak highly of the beneficial effect of distending the bladder with some bland fluid. This, they assert, excites reflexly contractions of the ureter and favor the expulsion of any pus collections. Personally I have had no experience with this method of treatment.

CASE I.—A primigravida seen in consultation with Dr. F. Lange. The patient was near term. Had been treated for cystitis in Philadelphia for six weeks before coming to this city. When first seen by Dr. Lange was very ill and had distinct signs of double pyelitis. He cut down upon one kidney and gave exit to a moderate amount of pus from the pelvis. The symptoms not improving and the condition of the patient being desperate, he cut down upon the other kidney and found a similar collection of pus. The patient only grew worse and she died a few days later undelivered. When I was called to see the case the patient was almost moribund, and the object of my being called was to determine the advisability of doing a post-mortem Cesarean section. There was a history of gonorrheal infection shortly after marriage, from which time the pregnancy dated.

CASE II.—Mrs. X., aged twenty-two, when in the sixth month of her first pregnancy was taken ill with vague symptoms referable to the stomach, the most pronounced of which was pain at the epigastrium. These symptoms continued for some days before any renal symptoms developed. As this was in 1898, before pyelitis in pregnancy was so well known, a diagnosis of acute nephritis of pregnancy was first made. But the temperature persisted, and as the albuminuria was very moderate and the amount of pus in the urine quite considerable, it was changed to that of pyelitis. The patient was very impatient and several consultants were called. Finally it was decided to empty the uterus. This was done and in a few days the pain and the temperature disappeared. The pyuria persisted for several months. The patient went through two subsequent pregnancies without any recurrence of the pyelitis.

CASE III.—Mrs. M., seen September 10, 1904, in consultation with Dr. Chas. F. Snyder, at Madison, N. J. She was thirty-six years old, married eleven years, had four children, last child four years ago, and was now pregnant five months. August 25, she began to suffer with painful and frequent micturition and considerable pain in the region of the left ureter and over the bladder. The urine was cloudy, contained a trace of albumin, considerable pus and epithelia, but casts were not present. Temperature ranged from 98.3° to 100.4°, pulse 90 to 110. During this period she had several chills and chilly sensations. When seen by me the patient looked and behaved like a very sick woman. There was some tenderness over the region of the left kidney. A cystoscopic examination was negative. In view of her tubercular history, her general condition and that there was no improvement under rest in bed, milk diet and urinary antiseptics, I advised emptying the uterus if the patient did not improve in a few days. This was done September 15, six days later. Improvement set in promptly after this. The pyuria persisted for some time after. October 29, 1904, the following report was obtained from the laboratory of Reed and Carnick, Jersey City: "Urine pale yellow, slightly acid, specific gravity 1013.51 ounces in twenty-four hours, albumen negative, urea $2\frac{1}{2}$ grains to the ounce, free pus and in clumps, leucocytes squamous pavement epithelia and medium and small, round epithelia. I learned subsequently that the pyuria finally disappeared entirely.

CASE IV.—Mrs. K., seen in consultation with Dr. E. Libman,

June 24, 1903. She was twenty-one years of age, married seven months, and her last menses occurred December 7 to 12, 1903. Two months before she had frequent and burning micturition, which was quickly relieved by treatment. Four weeks before she had an attack resembling grip with pain between the shoulders, and there was a suspicion of dry pleurisy. Ten days before I saw her she began to suffer with pain in the right lumbar region. This was preceded by painful and frequent micturition. June 25, the patient began to have chills. Temperature during the preceding days as follow:

June 21, Temp.,	98.4°-100.4°	pulse, 88- 98.
June 22, Temp.,	98.8°- 99.4°	pulse, 84- 92.
June 23, Temp.,	99.6°-100.2°	pulse, 76- 96.
June 24, Temp.,	99.2°-102.5°	pulse, 87-120.
June 25, Temp.,	100.4°-104.6°	pulse, 100-122.

During this time had attacks of severe pain in the right lumbar region and there was marked tenderness on deep pressure over the kidney, but no enlargement of it could be detected. June 26, had severe chill and temperature rose to 104.5°. June 27, another severe chill lasting forty-five minutes. Temperature 105°, pulse 120. Dr. Libman who had repeatedly examined the urine found large quantities of pus and numerous colon bacilli, no streptococci nor gonococci. June 28, condition about the same. Having some uterine contractions since last night, cervix dilated to about the size of a fifty-cent piece. It was evident spontaneous abortion had set in and it was deemed advisable to assist nature in her efforts, consequently a Barnes dilating bag was inserted into the cervix. June 29, 3 P. M. Patient expelled a premature fetus, probably about six and one-half months, which lived 24 hours. After this the symptoms gradually subsided, there was no further recurrence of the chills and the temperature fell to the normal in four days. The pyuria persisted in diminishing amounts for several months. The patient conceived again December, 1905, was delivered at full term September 18, 1906. The entire pregnancy, labor and puerperium were without incident. Urinary symptoms were not present at any time. The patient occasionally suffered from frequent micturition attended with some burning, but the urine contained no abnormal elements, and the symptoms yielded readily under appropriate treatment.

CASE V.—Mrs. G. F., aged thirty-three years, married twelve years, four children, last child two years ago, six years ago had an attack of hemoptysis and T. B. were found in the sputum. The pulmonary symptoms persisted for about a year. Since then takes cold easily and has frequent attacks of cough but no T. B. has been found in the sputum. April 24, 1905. Is now in her seventh month of pregnancy, says when three months pregnant began to suffer with pain in the right side of the abdomen radiating to the right lumbar region and down to the vulva. The pain was very severe for about a week and during that time suffered from frequent and painful micturition. Does not know whether she had any fever. During the first three or four months of her present pregnancy she says she had daily chills (Sic). For the week prior to my seeing her she had some fever and had to remain in bed. During this time had severe pain in the right lumbar region which was relieved by the frequent administration of morphia. Present condition, considerably emaciated, hyper-sensitive, calls out with pain when any part of the abdomen is touched. But the tenderness over the right kidney is marked and unmistakable. Also marked tenderness on pressure in the right iliac fossa. No tenderness over the "McBurney point." On vaginal examination complains of pain when any part of the anterior vaginal vault is touched. No appreciable thickening detected of the right ureter. Urine, acid, specific gravity 1006, trace of albumin, large number of pus cells and epithelia, occasional red blood-corpuscles, numerous bacteria,¹ no T. B. and no casts. Patient placed upon proper diet regimen instructed to lie on her left side, an ice-bag over the right kidney and urotropin grains X very four hours administered. May 2. For the preceding eight days symptoms have been growing worse, temperature ranging from 101° to 103°. Pulse constantly rapid, 120 to 130. Pain in right lumbar region very severe and not relieved even by liberal doses of morphine hypodermatically. In view of her tubercular history and from the fear that she would become addicted to morphia, it was decided to empty the uterus. May 3, delivered of a female child of about 7 months which lived for 6 hours. After this the pain in the right lumbar region and along the course of the right ureter subsided as if by magic and the fever rapidly fell to the normal. It was several months before the pus in the urine entirely disappeared. Subsequent to the delivery the right ureter was catheterized to determine whether the process in the kidney was tubercular, but no evi-

dences of that condition were found. The subsequent good health of the patient confirmed this finding.

CASE VI.—I. F., aged twenty-five years, married one year. In the sixth month of her first pregnancy was seized suddenly with pain in the right lower quadrant of the abdomen, which was not radiating. The pain was so severe that she was forced to go to bed. Three days later had a chill followed by fever. Had moderate frequency of micturition which was attended with slight burning sensation and some tenesmus. I was called to see her on the seventh day of her illness, the medical attendant having made the diagnosis of acute appendicitis. On a careful examination by me this disease was excluded. As there was marked tenderness on deep pressure over the region of the right kidneys, a probable diagnosis of pyelitis was made, which an examination of the urine confirmed. The report of the urine was as follows: "Urine cloudy, specific gravity 1021, alkaline, albumin faint trace, many pus cells, moderate number of epithelia." She was admitted into Mount Sinai Hospital, where she rapidly improved under the usual treatment. Discharged a week later, being practically well, although the urine still contained a moderate amount of pus. I learned afterwards that she went to term, gave birth to a healthy child and that the labor and puerperium were normal. Subsequent fate unknown.

CASE VII.—Mrs. F., aged thirty, had three children. Began to suffer with severe pain in the region of the right kidney in the third month of her pregnancy (fourth). Urine was acid, had a trace of albumin, many pus cells and moderate number of epithelia. There was marked tenderness over the right kidney. As the patient's general health was poor and as she showed no sign of improvement after two weeks of appropriate treatment, it was decided to empty the uterus. The fever course ran from 100° to 101°. After the artificial miscarriage she improved rapidly, the pus gradually disappearing from the urine. She has enjoyed good health since, now a period of two years.

CASE VIII.—R. B., aged twenty, married ten months, first pregnancy. When four and a half months pregnant was seized with chills, high fever and pain in the right loin. Had frequent micturition and says the urine contained blood. After illness had continued for about three weeks she was admitted to the second Surgical Division of Mount Sinai Hospital. The treatment consisted in rest in bed, milk diet, urotropin and opiates to allay the pain which was very severe. A couple of attempts were made

to irrigate the pelvis of the kidney with weak solutions of nitrate of silver. Her temperature had ranged from 98.4 to 104.5, pulse from 88 to 116. Not improving after a week she was transferred to the second Gynecological Division of the hospital. This was on October 1. On the same day steps were taken to induce labor. October 3, expelled a fetus of about six and a half months. On the following day she had a rise of temperature to 104°, pulse 120. After this the fever gradually disappeared and remained normal after October 6. She was discharged October 19. The urine at that time was clear, had a specific gravity of 1020, was acid, had a faint trace of albumin and contained a moderate number of pus cells and epithelia.

CASE IX.—R. H., aged twenty-five years, had one child four years ago and a premature birth at six months two years ago. Admitted into Mount Sinai Hospital, November 1, 1906. For the past month she stated she had pain in the abdomen and small of the back. Micturition was very frequent and very painful. Her temperature was 98° in the morning and 102 in the evening, pulse 98 to 112. There was decided tenderness over the right kidney. Urine acid, 1020, faint trace of albumin, several epithelia and numerous pus cells. The symptoms rapidly improved under the usual treatment. November 6, temperature normal. November 9, patient discharged. Urine still contained a moderate quantity of pus. Further fate unknown.

PUERPERAL PYELITIS.

CASE X.—Mrs. H., aged thirty, married seven years, passed through an acute attack of gonorrheal cystitis, January, 1905. The urine at first was bloody and contained gonococci. Under appropriate treatment the attack subsided and the urine became normal. In November of the same year she conceived for the first time. Her pregnancy ran a normal course, and only once, during July, she suffered for a short time from frequent micturition. This was readily relieved by a few bladder irrigations. Repeated examinations of the urine during the entire pregnancy were attended with negative results. Her labor was at term and quite normal. The puerperium was perfectly normal in every respect until the twelfth day, when she was seized with a chill followed by fever (103°) and pain in the left lumbar region. The lochia had practically ceased, the uterus was well involuted and no exudate nor thickening was found in the pelvis. There was decided tenderness over the left kidney which appeared to be

slightly enlarged. The urine was acid, specific gravity 1010, after standing a heavy deposit formed which under the microscope proved to be chiefly to be made up of pus cells with a moderate number of caudate epithelia and numerous bacteria, the nature of which could not positively be determined. The attack lasted about fourteen days, fever curve ranging from 98° to 102° , and the sediment of pus varying in depth with almost every specimen voided. At no time could gonococci be found in the urine. The pus gradually disappeared from the urine and the patient has remained in very good health since, excepting that occasionally she suffers from an increased frequency of micturition.

CASE XI.—Mrs. L., wife of a physician, twenty-four years old, was delivered two weeks before I had seen her. Her labor was normal and so was the puerperium until the 8th day when she was seized with a chill which was followed by rather high fever (102° – 104°). She had severe pain in the right side of the abdomen which radiated toward the right border of the ribs. Bimanual examination was negative. There was no rigidity of the abdominal muscles, though there was a certain degree of tenderness over the whole right half of the abdomen. There was some tenderness over the right kidney on deep pressure. Even before obtaining a report of the urine I surmised that we had to deal with an acute pyelitis of the puerperium and not with acute appendicitis, as her husband and some of his medical friends had diagnosticated. The urine showed a fair quantity of pus with epithelia and numerous undetermined bacteria. On the strength of the condition of the urine and the physical signs I felt fairly convinced of the correctness of my diagnosis. But I had great difficulty in convincing the doctor who was very insistent that an operation for acute appendicitis should be performed upon his wife. The attack lasted about two weeks, after which the patient made a very satisfactory recovery and has remained in good health up to the present time—a period of four years.

PYURIA WITHOUT FEVER.

CASE XII.—Mrs. J., aged twenty-three years, married eighteen months, had a very bad tubercular family history. She herself had suspicious symptoms of pulmonary tuberculosis for the winter prior to her becoming pregnant. Her last menses occurred December 22, 1906. Her pregnancy pursued a nor-

mal course until the beginning of September, 1907, when her family physician notified me that he had found albumin in the urine. The patient, however, was feeling perfectly well, had no pain, no increased frequency of micturition and the rectal temperature was normal. Specimen of urine obtained September 9 was as follows: Total amount in 24 hours 2160 c.c., acid, 1008, marked trace of albumin, urea 1.1 per cent., sediment consists chiefly of numerous epithelia and phosphates, no pus corpuscles. Specimen two days later showed a fair amount of pus cells, no casts, examination for T. B. negative. The specimens were examined every two days and alternately there would be a fair amount of pus and again almost none at all. This condition of affairs persisted until some weeks after delivery, which was normal as was also the puerperium. At no time could any tenderness be elicited on pressure over either kidney. T. B. were repeatedly searched for but could not be found. The patient's general health improved during pregnancy and she has gained in weight since delivery. Apart from the pyuria for about eight weeks she has not had any urinary symptoms.

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751 MADISON AVENUE.

THE PLACENTAL TRANSMISSION OF BACILLUS TYPHOSUS WITH REPORT OF A CASE.

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For more than a score of years the possibility of the infection of the fetus by placental transmission, during the course of typhoid fever in the pregnant mother, has been known. With the improved bacteriological technic of the last decade, it has been possible to demonstrate the presence of the typhoid bacillus in the circulating blood, and in the various organs of the fetus, in a number of cases in which the mother has aborted during the course of the fever. The number of such cases recorded in the literature, however, is a comparatively small one, for which reason it seemed advisable to report the following case, in which there was found an unusual localization of the bacillus in the amniotic fluid.

Clinical Notes.—M. E., aged twenty-four years, was admitted to the medical service of Professor Barker in the Johns Hopkins Hospital, on the fifteenth day of a typhoid fever infection. For two weeks previous to admission she had suffered with headache, backache and general malaise. On examination the patient was found to have a dull characteristic typhoidal expression.

A few rose spots were visible on the abdomen and the spleen was easily palpable. A pregnancy of about three and a half months' duration was noted. The Widal was positive on the day of admission and a blood culture taken the same day yielded a growth of *B. typhosus*.

The patient ran a typical course of typhoid fever until the twenty-second day of the disease, when she suddenly developed pain in the lower abdomen of such severity that an intestinal perforation was at first suspected. The pains, however, proved to be uterine in origin and a few hours later the membranes were found protruding from the vagina. Pressure on the fundus uteri at this time expressed the fetus in the caul.

The temperature at the time of abortion rose to 104° , the highest point during the illness, and fell quickly to 99° on the afternoon of the same day. The remainder of the course of the disease was uneventful and the patient left the hospital well on the forty-third day.

Bacteriological Report.—The fetus was sent to the Bacteriological Laboratory with the membranes intact, making it possible to take cultures from the amniotic fluid and fetal viscera without contamination. A pure culture of a motile bacillus, in every respect like that obtained from the maternal blood, was grown from the amniotic fluid, the heart's blood, the spleen and the umbilical vessels. The organism was later identified as *B. typhosus* by agglutination with an immunized rabbit serum.

A study of the literature bearing upon the subject of the placental transmission of typhoid infection from the mother to the fetus in utero, reveals the fact that but comparatively few such cases have been reported and forces the conclusion that in typhoid fever complicated with pregnancy, the infection of the fetus is by no means the rule. As early as 1884 Reher described typhoid bacilli found in the liver of a six months fetus from a pregnant woman who aborted on the nineteenth day of an attack of typhoid fever. The bacillus described was not clearly differentiated from the colon bacillus and its identity is doubtful. A case reported by Neuhass in 1886 must also be considered as unproven. Eberth (1889) cultivated organisms which were identified as typhoid bacilli, from the heart, lung, and spleen of a six months fetus. Following these earlier observers, Hildebrandt, Ernst, Balp, Frascani, Janiszewski, Freund, Duerk, and Etienne have each reported the finding of typhoid bacilli in the fetus. In all of the foregoing cases the organisms were identified

by means of cultural characteristics. Speier (1897) recovered typhoid bacilli from a four months fetus and was the first to identify the bacilli by the agglutination test. Fordyce and Horton-Smith have each reported one case. Richardson (1900) observed two cases, in one of which the bacillus was obtained from the heart, liver, and kidney. Bolton (1901) cultivated typhoid bacilli from the gall-bladder and spleen of a five months fetus.

Lynch (1902), in the *Johns Hopkins Hospital Reports*, dealt with the subject of placental transmission in an exhaustive manner and gave a comprehensive review of the literature, adding a case of his own in which the typhoid bacillus was cultivated from the fetus of a woman aborting on the twelfth day of the disease. In another case, observed by the same writer, of an infant borne prematurely in the thirty-sixth week, by a woman during the course of typhoid fever, the typhoid bacillus could not be isolated from the viscera of the infant at autopsy seventy-one days later. The Widal was negative at birth and again at autopsy. Cultures from the placenta, fetal vessels, and cord were also negative.

In the same year McDaniel reported a case of typhoid fever in which the mother aborted during convalescence. In the five months fetus an organism was obtained, from the spleen, liver, and peritoneal fluid, which presented all the characteristics of *B. typhosus* with but one exception, that it formed gas in the media containing dextrose. The bacillus agglutinated with the serum of a typhoid patient in a dilution of 1:25; also with the serum of the mother and fetus.

The multiplicity of the localizations of the typhoid bacillus in the infected fetus in the cases recorded is interesting. Most frequently the organism has been isolated from the spleen. In six of the cases reported it was found in the heart's blood. It has also been cultivated a number of times from the mesenteric lymph glands, liver, kidneys, lungs, umbilical vessels, placenta, and peritoneal fluid. Bolton reported a pure culture from the gall-bladder. In the case presented in this paper it was grown in pure culture from the amniotic fluid. It is not surprising that the bacillus should be found in the liquor amnii, if it be true that this fluid is composed, in some measure at least, of fetal urine. Although the question of the source of the liquor amnii is as yet an open one, there is much evidence in favor of regarding it as a secretion of the amniotic sac rather than an excretory product.

The recent observation of Corrigan would seem to demonstrate that the fetus does not empty the bladder before birth. The typhoid bacillus has been found in the amniotic fluid of pregnant guinea-pigs by Chantemasse and Widal. These authors inoculated the animals with a culture of *B. typhosus* and found the organism present in the amniotic fluid twenty hours later.

While in the reports here cited, it has been demonstrated that during the course of typhoid fever in the pregnant mother, the fetus may become infected, there is abundant evidence, on the other hand, to show that such infection does not invariably result. In several cases a careful bacteriological examination has failed to demonstrate the presence of the typhoid bacillus in the fetal viscera. Such negative findings have been reported by Flexner, Apert, Frascani, Bolton and others. After a careful analysis of the cases reported, Lynch concluded that while the typhoid bacillus may pass from the mother to the child in utero, placental transmission is not the rule, and that in cases where such transmission does occur, there are generally placental lesions of a hemorrhagic type; also, that there is no evidence that the fetus may survive the infection in utero. It is now generally conceded that an infection of the fetus takes place only through the medium of an injured placenta; and that such injury may exist prior to the disease, or may result during the course of the disease from the action of the toxins in the circulating blood of the mother. An intact syncytial layer in all probability serves as a protective germ filter thereby preventing the transmission of the organism.

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CESAREAN SECTION: DISCUSSION OF INDICATIONS
FOR—REPORT OF CASE WITH RECOVERY
OF MOTHER AND CHILD.*

BY

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THAT surgical interference is necessary in some cases of labor with extremely contracted pelvis is probably admitted by all. The points at issue involve first, different methods of surgical interference, and second, indications for the same.

The different surgical methods employed are Cesarean section, symphyseotomy, pubiotomy, craniotomy, embryotomy, and vaginal Cesarean section.

Cesarean section dates back at least before 1500 A.D., but no authentic information is available during those early years, the first authentic case probably being that of Trautmann, of Wittenberg, in 1610. At this time sutures were not used in the uterine incision, and because of the frightful mortality by this method, due largely to hemorrhage, Porro, in 1876, advised amputation of the uterus at the cervix and the stitching of the stump into the wound. In 1882 Sanger advised employing uterine sutures, and this step with surgical asepsis placed Cesarean on a good, practical, working basis, and as Cesarean section became more popular Porro's operation became less so.

Symphyseotomy and pubiotomy were introduced at a much later date and came into competition with Cesarean section in the so-called "border-line" cases.

In a discussion of the question of the indications for any one of these surgical measures several points arise. The object of the whole matter is to save life, and that raises the first point—Who is judge to decide that one life is to be sacrificed for another, destructive operations resulting in the death of all infants? Deaver¹ discussing the point as to whether the child should be sacrificed in the interests of the mother, says, "It is argued, first, that the mother's life is of much more consequence than is that of the unborn infant. A weighty objection to this is the fact that neither the surgeon nor the accoucheur is a legal executioner, even were he competent to judge between the in-

* Read before the Winnipeg Medico-Chirurgical Society, Jan 6, 1908.

trinsic value of the two lives, each of which is equally under his care."

Any mode of treatment which always disregards the life of the child in the interests of the mother is wrong, and on that ground alone resort in all cases of difficult labor to craniotomy or other destructive operation is unjustifiable.

It becomes then a question which one of the methods available should be used in each individual case.

The indications for symphyseotomy and pubiotomy are considered by Williams² to be the same. He says they are "not indicated in cases in which the conjugata vera measures less than seven centimeters. Accordingly, they scarcely enter into competition with Cesarean section, except for the broadened relative indication. One may look forward to pubiotomy practically displacing Cesarean section in the so-called 'border-line' cases as it enables one to subject the patient, to the test of labor, and to operate after several hours of second-stage pains have demonstrated that the head cannot pass through the superior strait."

Regarding craniotomy, Williams says: "Generally speaking, craniotomy should not be performed upon the living child if the mother is in good condition, amid suitable surroundings, and in the hands of a competent operator. It is positively contraindicated when the conjugata vera is less than 5.5 centimeters, since in such cases the extraction of the child is attended by a greater maternal mortality than Cesarean section."

Other destructive operations are very rarely used.

Coming then to Cesarean section, some classes of cases possibly will be admitted to be rightly treated thus, while others are debatable. The former would include cases where the conjugata vera is less than 7.5 centimeters, the child alive, the mother has not been infected by manipulations and is not badly worn out by prolonged labor. The latter would include cases where the conjugata vera may be 8 or 8.5 centimeters, but apparently the child is unusually large. This, and the points as to whether the mother has been infected, or is unduly worn out and unable to stand the operation, must be settled according to the judgment of the accoucheur.

The case I have to report to-night belongs to the class of contracted pelvis. Mrs. S., aged thirty, full term, was seen in consultation with Dr. C. E. Sugden. Labor commenced at 3 A. M., first seen at 7.30 A. M. but pains were not strong and there was

little dilation of the os. At 10.30 the doctor called again and found pains strong. Tried to deliver by the use of forceps but no progress could be made.

We saw the patient together at 1.45 P. M., and decided to remove her to the hospital at once and operate, preferring to do a Cesarean section rather than either pubiotomy or symphyseotomy.

External measurements of pelvis were anterior superior spines 24 centimeters, trochanters 28 centimeters, and external conjugate or *Baudelocque's diameter*, 14 centimeters, the normal, according to Williams, for these being 26, 32 and 21 respectively. Thus it will be seen that the pelvis was flattened from before backward.

Schauta³ has shown from an examination of 100 pelves that the difference in length between the external and the true conjugate varies between 5.5 and 10 centimeters. It is stated also that in pelves where the external measurement is low the conjugata vera is usually shortened out of proportion to the external. In this case, therefore, the conjugata vera was probably between 6 and 7 centimetres.

The incision was about six inches long extending from two and a half inches above the pubes to the left of the umbilicus. Pads were placed between the abdominal wall and the uterus and an assistant held the uterus firmly against the abdominal wall from this time on. The incision in the uterus was not quite as long as that in the abdominal wall. The placenta was found adherent to the anterior surface of the uterus. The hand was quickly passed up and to the left, the membranes ruptured and the child delivered. Hemorrhage was very free and aseptic ergotone was given hypodermically. A second assistant grasped the bleeding walls of the uterus while the placenta was cleared out at once and the uterus was now seen to contract well and the bleeding ceased. A drain of iodoform gauze was passed through the cervix. The uterus was sewen with silk using the stitch recommended by Sanger.⁴ The tubes were cut at an angle, close to the uterus and sewen into the cut surface again. The abdominal wound was closed by layer sutures. Time forty minutes. The patient was given saline by the bowels for some time after returning to bed.

On the second day pneumonia developed in the right lung. The patient, however, made a good recovery and left the hospital with her baby on the twenty-fifth day.

Other indications for Cesarean section according to some writers are the following: Cancer of the cervix, tumors in the pelvis, extremely rigid os, placenta prævia, dystocia following ventro-fixation, eclampsia, and cases of sudden death of the mother while the child is still alive.

In cancer of the cervix and rigid os perhaps vaginal Cesarean as described by Dührssen⁵ is a better operation though one would hardly care to employ it in the former.

In the case of tumors in the pelvis which cannot be displaced under an anesthetic Cesarean section is certainly indicated, as it is also in cases of sudden death of the mother.

In placenta prævia, however, there is no unanimity of opinion as yet. It seems to be the opinion of some writers that in central implantation with rigid os Cesarean section should be done. But in marginal implantation normal labor is superior.

Bearing on this point the following statistics and arguments seem to lead one to admit the above. Though in many cases of placenta prævia labor comes on prematurely, we must remember the mortality of premature infants is only 22 per cent. as calculated by Ford,⁶ that of infants in placenta prævia by rapid extraction is about 55 per cent., and by slow extraction about 67 to 83 per cent. Maternal mortality in placenta prævia is placed at 11 per cent. by Deaver¹ for all cases, while in central implantation the prognosis is considered by Schanta to be from three to eight times more serious than in marginal cases which would probably place it at 30 per cent. or more.

Up to 1904 there were twenty-four cases of placenta prævia reported having been treated by Cesarean section, and after deducting those cases where the fetus was not viable or was known to be dead, the fetal mortality was 50 per cent. and the maternal mortality was 18.75 per cent.

The maternal mortality in cases treated on lines other than by Cesarean section is reported at 11 per cent. by Deaver, by Williams—probably a little higher than this.

It will thus be seen that fetal mortality is probably reduced a little and maternal increased a little, and it remains for each set of workers to see which class of treatment can further reduce the mortality.

Now as to eclampsia. This is a comparatively new field of work for Cesarean section. During the last three years it has been received with a great deal more favor than ever before. Of the sixteen or eighteen cases I have been able to find re-

ported, all but two have been by Dührssen's vaginal operation. The results seem to be better than by the usual means of Bossi's dilator, manual dilatation, etc. Here also time will be needed to prove whether the surgeon or the obstetrician has the best results.

One more possible indication was mentioned, viz., of dystocia following ventro-fixation. During 1904 and 1905 I found seven cases reported from various parts of the United States. To my mind, however, the operation described by Hurdon, of Baltimore, and others, is superior, viz., that of doing a laparotomy merely to sever adhesions of the uterus and allow labor to progress in the usual way.

This raises the whole question of ventro-fixation and ventro-suspension; which is the better? What are the indications for each, and how should each operation be done?

I wish to refer to one more point touched on in the case I reported, viz: When it becomes necessary to do a Cesarean section for any reason, is it wise to allow the woman still the power to procreate? An editorial on this point in the *London Lancet*, March 19, 1906, expresses the unqualified view that the surgeon should advise the patient against being sterilized; and should endeavor to cause adhesions between the uterus and the abdominal wall so that the second Cesarean section could be done extra-peritoneally.

When this paper was presented to the Winnipeg Medico-Chirurgical Society I expressed the opinion that in any case where a Cesarean section would be necessary if a second pregnancy occurred, the woman should in many cases be sterilized, for she has not only the risk of operation to run, she has the additional risk of being so situated that a Cesarean section could not be done under favorable circumstances, or perhaps she would be removed to some place where it could not be done at all.

In order to get more light on this point I submitted the following question to each of these gentlemen: Binnie, of Kansas City; Mayo, of Rochester; Temple, of Toronto; Gardner, of Montreal; Murphy, Webster and DeLee, of Chicago; Crile, of Cleveland; Williams, Kelly and Hunner, of Baltimore; Deaver, of Philadelphia; Fry, of Washington, and Howard C. Taylor, of New York.

"In a Cesarean section, Mrs. S., age thirty, first pregnancy, conjugata vera 6.75 centimeters, healthy child having been delivered, would you sterilize?"

The replies were as follows:

"Scientifically speaking—yes. If people positively desired another child and mother was willing to submit to another Cesarean, I might give way to their wishes. Yours truly,"—J. F. BINNY.

"I would not on my own initiative sterilize in the case you speak of."—W. J. MAYO.

"Do you mean you would advise the removal of the ovaries and tubes to prevent conception again, I would say 'Yes.'"—J. ALGERNON TEMPLE.

"In a case such as you state I think I would not sterilize the woman. It is a first pregnancy, the child may be delivered dead, or if it survive it may die later. The desire for, and importance of, other offspring may be very great. With perfect aseptic technic in the hands of trained abdominal surgeon the conservative Cesarean section is so successful that I hold firmly to this opinion. Much, if not everything, will depend on the operation being elective in a patient who is not infected before operation by much examination and attempt at delivery by other methods."—N. GARDNER.

"In reply to your letter of February 11th, would say yes, if the patient consents."—J. B. MURPHY.

"In reply to your letter, I beg to state that my practice has been to discuss the matter with the patient and her husband before operation. If they are determined to take the chances of a second pregnancy, I perform a conservative operation. If they leave the matter to my decision I always perform a Porro operation or a conservative Cesarean with division of the tubes."—J. CLARENCE WEBSTER.

"In reply to your question, I would not sterilize the patient, since she may wish for more children. If the patient demanded it I would do it."—J. B. DELEE.

"My answer to your letter of February 11th would be that, in view of the safety of the operation, I should permit the patient to choose as to whether a second or third Cesarean section should be made. Either one may be done with safety."—GEORGE W. CRILE.

"Your letter of the 11th inst. reached me this morning. In reply to your question as to whether a woman having a conjugata vera of 6.75 cm. should be sterilized after a Cesarean section, I would say that the decision to my mind would depend in great part upon her social status. If the patient were ignorant

and lived in a locality far removed from expert medical aid, I should undoubtedly do a supra-vaginal amputation of the uterus and leave the ovaries behind. On the other hand, if the patient were intelligent and would be reasonably able to place herself in competent hands, I should earnestly advise against sterilization after the first Cesarean section. My reason for this belief is that I consider that one-child marriages are not desirable; moreover, if anything should happen to the child the average woman would greatly regret her inability to have another one. This being the case, and especially in view of the comparatively low mortality of Cesarean sections at the present time, I consider that sterilization should not be done except at the urgent desire of the patient and her family, after all the circumstances have been fully explained to them."—J. WHITRIDGE WILLIAMS.

"In response to yours of February 11th, would say that it is perfectly justifiable to sterilize Mrs. S. with a *conjugata vera* of 6.75. The patient should be given the right to decide, however, herself before doing the operation."—DR. HOWARD A. KELLY.

"In answer to yours of February 11th, I would say that the mother should have the deciding of the question of an operation for sterilization. I would explain the great risks that she might lose her only child and the advantages to any family of having more than one child, and advise her to carry another child to Cesarean and have the sterilization done at that time. This could be done by a Porro or by simply amputating the tubes. Some mothers might even prefer to have a third Cesarean done, and with our present-day methods of abdominal surgery there is no logical reason why this should not be carried out providing no vaginal tampering is allowed."—GUY. L. HUNNER.

"In answer to your letter I beg to say, that I would not, under the condition which you describe, sterilize."—JOHN B. DEEVER.

"After explaining the situation to the patient and her husband, I would be guided by their wishes in the matter. I do not sterilize the woman after Cesarean unless requested to do so."—HENRY D. FRY.

"I would not do so unless the patient strongly wished it, and would advise against it with her. Considering the small mortality with Cesarean section at the present time, it seems to me that it would be unnecessary."—HOWARD C. TAYLOR.

Sir W. Sinclair⁷ reports a case in which he successfully performed Cæsarian section for the fourth time. However, in districts somewhat remote from large centers, the question is an

entirely different one. In all parts of the world where cities and towns are young, and settlements are new, people are continually moving farther out on the frontier. The struggle for existence demands it. Furthermore, the bulk of the people in these newer countries are not so situated financially that the mother could return two, three and four times, to the surgeon who saw her successfully through Cesarean section the first time. And, the grade of intelligence of the patient and her husband should also be taken into account.

I submit, therefore, that this problem cannot be settled by a universal rule, and that an important point to be considered is that raised by Dr. Williams, viz., the social status of the patient with all considerations arising therefrom.

To sum up, then, Cesarean section should be done:

(a) In all cases of pelvic contraction where the conjugata vera is below 5.5 centimeters.

(b) In cases where the conjugata vera is between 7 or 7.5 centimeters, and 5.5 centimeters, and the patient has not been infected, is not unduly reduced, and the child is alive.

(c) In cancer of the cervix where dilatation will not take place. *Craniotomy* or *embryotomy* should be done:

In cases of pelvic contraction where the conjugata vera is not below 5.5 centimeters, and the child is not alive.

(d) In cases of pelvic tumors which cannot be displaced from the pelvis under an anesthetic.

(e) In all cases of sudden death of the mother.

(f) Possibly in central implantation, placenta prævia.

(g) Possibly in dystocia due to ventro-fixation or ventro-suspension.

Vaginal Cesarean section should probably be done in cases of severe eclampsia with very rigid os.

Pubiotomy or symphyseotomy should be done in cases where the conjugate vera is not less than 7 or 7.5 centimeters, where the fetus is still alive.

I wish to express my deepest appreciation of the courtesy of the gentlemen whose personal communications are quoted herein.

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416 MAIN STREET.

EXTRAUTERINE PREGNANCY AT TERM, WITH REPORT OF A CASE.

BY

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The record of the case is as follows:

S. B.—Menses began at eighteen, regular, with some pain. One miscarriage eight years ago, two weeks over her period. Extrauterine operated upon (left side) in 1899. Last regular period in July, 1905. In August, the flow appeared at the proper time, but lasted a week too long. From that date she bled every few days until December, and then ceased until about one month ago, since which time she has bled at intervals.

On June 10, 1906, I was asked to see her. Her date for confinement had been calculated to be the 22d of May. Fetal movements had ceased about April 15. They had always been felt on the right side of the abdomen. At this time she had well-marked spurious labor. Since that date there has been a free flow of milk. The abdomen has markedly decreased in size during the past six weeks. The pains of spurious labor were of a "bearing-down" character and a doctor, summoned in the absence of Dr. Burk, sat by her for hours with the idea that she was in labor. The abdominal enlargement appeared in the latter part of September, 1905, and at that time she had a good deal of nausea and vomiting. She suffered from gastritis.

Examination.—Abdominal enlargement, about that of the seventh month, was atypical, as it was much more pronounced on the right of the median line. Palpation showed a mass on the right extending from a short distance below the costal border to just above the pelvic brim and feeling like a fetal back. On the left side of the abdomen there was absence of all solid masses, no extremities felt, with marked tympany and peristalsis. There was, however, a sensation as of a cystic mass in this situation.

No presenting part was palpable in the pelvic brim, the mass stopping above it. Deep palpation about three fingers to the left of the median line and about the same distance above the symphysis showed a mass apparently of the same consistence as the main mass on the right side. The percussion note over this major mass was absolutely flat. No fetal heart-sounds or movements could be elicited.

Vaginal Examination.—Cervix small and behind symphysis. External os slightly patulous but not softened. Body of the cervix less in length than normal. Uterus could not be differentiated from the mass. In the cul-de-sac of Douglas and below in the recto-vaginal space a hard mass was felt as large as a seventh-month fetal head and simulating it in every way, except that no sutures could be felt. This body seemed connected with the major right-sided mass. The anterior half of the inlet was empty. Temperature 101°, pulse 120. The urine showed albumin and casts.

Operation, June 15, 1906.—Chloroform. Median incision from xiphoid to symphysis. Tumor of a cystic nature resembling a dermoid in appearance. Uterus but slightly enlarged (second month) was found above symphysis, rotated on its vertical axis to the right and pushed over to the right of the median line and in front of the tumor. The right tube ran outward and upward across the face of the tumor and along its right side. The round ligament was entirely below and bore no relation to the tumor. No sign of the ovary was detected. The tumor was adherent to the abdominal wall throughout. The intestines were adherent to the anterior face of the tumor on the left side. The tumor was separated with little difficulty from below upward, but the sac ruptured as it was being turned out of the abdomen and the head of a full-term child appeared. The broad ligament was ligated with silk. A piece of sac wall, about four inches square, densely adherent to the bottom of the pelvis, was left behind. A drain of gauze and rubber tube was inserted. Separation of coil of intestines adherent to the old scar was performed. The placenta, situated at the upper pole of the tumor in the region of the liver, had entirely separated, its maternal surface being covered by organized lymph. The head had rested in Douglas's cul-de-sac, while the fetal back was to the right and in front. The child was slightly macerated and its head was somewhat collapsed. The cord passed around the back of the child. Convalescence was good after the first forty-eight hours, but the pulse was very

rapid and weak during this time. Morphine sulphate was used as the means of stimulation.

Dr. Schumann, pathologist to the Gynecian Hospital, kindly studied the specimen removed at operation, and his report is appended.

Diagnosis.—Secondary abdominal ectopic gestation at term. Specimen consists of a macerated, mature, male fetus with its membranes and a portion of the right fallopian tube. The fetus measures 36 cm. in length, is perfectly developed, hair and finger-nails complete. The right side of the body and head are much necrosed and macerated from being in prolonged contact with the parietal abdominal wall. With the exception of the right side, the fetus is closely invested by a sac of membranes averaging four mm. in thickness. (At operation the right upper portion of the sac was found densely adherent to the right abdominal wall the intestines and the omentum.) Sac is tough and fibrous in character, deep purplish-red in color and presents on its surface the remnants of many adhesions. The placenta, of normal size though somewhat macerated, is separated from the general abdominal contents by a somewhat thicker portion of the sac. On microscopical examination the sac is found to consist of an outer layer of rather dense fibrous tissue, rich in cells and showing some muscular elements. On the fetal side of the connective tissue is a layer of loose areolar tissue largely destroyed by maceration. Over the placental site the connective tissue is more dense and richer in cells. In some fields there are areas of dense round-cell infiltration. In no portion of the specimen can any specialized maternal tissue be differentiated, except the small attached segment of the tube, which apparently played no part in the pathologic process. There is then no clear evidence of any maternal structure forming either the sac wall or its attachment.—Schumann.

The relative rarity of the continuance of development of an extrauterine pregnancy either to a period of advanced gestation or to term makes it a matter of importance that every such case be reported. It is to be expected that in the future there will be even fewer of these late cases seen as the improved methods of diagnosis and greater skill on the part of the general practitioner will tend to their early discovery. The increased difficulties of treatment presented by the late cases renders the early diagnosis of paramount importance. In this connection it is also to be remembered that the diagnosis of an extrauterine pregnancy in

the earlier months is generally a relatively simple matter as compared with the difficulties often experienced at term or after the middle of gestation. The difficulty in the late cases is that while the diagnosis of pregnancy may be easy, there may be great difficulty in determining the extrauterine element. This, indeed, may be impossible, since without the introduction of the sound it may be impossible to map out the uterus. In other words, the mass which is really the extrauterine tumor may easily be mistaken for the body of the pregnant womb, the small fundus not being differentiable. This differentiation is of course the crucial point in the diagnosis, in conjunction with certain points usually presented by the early history, since in these advanced cases there is usually a complete picture of pregnancy both in signs and symptoms. In many of the cases there is superadded, however, the appearance of severe cachexia. This was well marked in the case reported, there being a question whether we were dealing with some grave malignant or tubercular state in addition to pregnancy or whether the diagnosis of the latter might not be a mistake and the whole condition be dependent upon a septic process.

To concisely consider the question of the diagnosis, it may be stated that in those cases seen before the death of the child the presence of fetal heart-sounds and fetal movements, the latter usually much more distinct than normal because of their nearness to the hand and much more painful than normal on account of inflammatory changes in the fetal envelopes, are of course diagnostic of the existence of pregnancy. When associated with certain peculiarities in the history and physical examination they should give rise to the suspicion of the true nature of the condition. It is to be reiterated, however, that in such cases the mistake has often been made of considering the extrauterine mass as the pregnant uterus, obstructed by some intrapelvic growth. Thus in moderately late cases a retrodisplaced incarcerated pregnant uterus has been diagnosed. The size of the abdominal swelling may be of importance in cases at term as it is often very great, simulating a twin pregnancy. The history obtained from the patient may or may not give evidence of the true condition; thus while there is often the history of an attack of pain in the early months, with a discharge of decidua, there may, on the other hand, be a complete absence of any historical variation from normal pregnancy. Moreover, it is to be particularly remembered that some statistics show a decidual dis-

charge in but 7 per cent. of all types of extrauterine pregnancy. The vaginal examination is of importance particularly with regard to the condition of cervical development and uterine identification. Distinct suspicion will be caused in the mind of the experienced examiner by the lack of development of the cervix, even if the uterine body is not differentiable. This was a point of great importance in deciding the diagnosis in the case reported.

The question of diagnosis is of much greater difficulty, as a rule, if fetal death has occurred. As a preliminary, it may be stated that the persistence of a supposed pregnancy for several weeks or more after the calculated term, is in itself suggestive of extrauterine development, since missed labor with intrauterine retention of the fetus is extremely rare. Therefore, in cases presenting a clear history of pregnancy, including fetal movements and fetal heart-sounds, even if the child be dead at the time of the examination, this history of prolongation well beyond the extreme possible date of the computed term may be of great importance from the stand-point of diagnosis.

In the cases now under consideration presenting a more or less trustworthy history of pregnancy, but with the absence of the positive signs of the condition, the diagnosis involves the differentiation of several pathological conditions, such as coincident intra- and extrauterine pregnancy, ovarian cysts, fibroid tumors of the uterus, sarcoma and carcinoma, as well as tuberculosis. The liability to peritoneal inflammation sometimes seen before, but more usually after fetal death, together with the other symptoms dependent upon a septic condition, often renders the diagnosis still more obscure. In the case reported the history of a characteristic attack of pain in the early weeks, together with the history of pain at or near term, which so closely simulated labor that a physician considered her about to be delivered, together with the definite knowledge of the existence of heart-sounds and fetal movements previous to our examination, were of course of great assistance in the diagnosis. Many cases in the literature have, however, presented no such definite symptom complex, and in their absence we can easily appreciate the frequent impossibility of making a correct diagnosis, especially in the presence of the grave symptoms of sepsis most markedly instanced in our case. We are able to determine the true condition principally by a combined abdominal and pelvic examination, which revealed a forward displacement of the cervix, together with an absolute lack of the developmental changes to be ex-

pected in the latter part of pregnancy, and in addition an asymmetric abdominal tumor, there having been a partial absorption of the liquor amnii, and a body in the pelvis posterior to and below the cervix closely simulating the fetal head, though its "feel" was not at all typical, partial collapse having occurred, due to post-mortem change.

The treatment of late ectopic pregnancy is not the simple problem which confronts the surgeon in the early period before the fourth month of gestation. In the cases presenting themselves before the end of the last-mentioned period few, if any, well-trained practitioners would hesitate to advise an immediate operation. Operation in advanced ectopic pregnancy is not, however, the simple procedure so commonly practised in all gynecological clinics for early cases. It is in many instances an operation of great magnitude, and the propriety of operative interference so universally conceded for the early case at the present day, cannot, in the opinion of many authorities, be unreservedly subscribed to in those which are pregnant at or near term, particularly if the child be still alive.

The presence of a living child is indeed the main difficulty in the determination of the proper treatment of these late cases. At a varying period after fetal death the difficulties of operative intervention become greatly lessened, since the placental circulation ceases. Its attachments, therefore, become less firm and thus its removal is possible. Unfortunately, however, there is no definite time interval between fetal death and placental atrophy which may be predicated with certainty unless such a long period is allowed to elapse that as a consequence other dangers necessarily arise. It is unfortunate that any prolonged waiting after fetal death will expose the patient to a grave risk of sepsis, as well as hemorrhage from placental separation. These are the cases which present such typically septic manifestations that they are often suggestive of infected neoplasms, abdominal tuberculosis, malignancy, etc. On the other hand the great difficulty experienced in the removal of the live placenta has taught the value of awaiting fetal death before attempting any complete operation. Because of this fear, various attempts have been made to destroy the fetal life in order that after waiting a reasonable time for placental atrophy the great danger of uncontrollable bleeding upon placental removal might be avoided. Cases have been reported in the literature in which the abdomen was closed entirely leaving the placenta *in situ* in order to avoid the dangers

incident to its removal. Judged by results, such a procedure cannot be recommended. As these methods involving destruction of the fetus have not been crowned with success, it has been advised, in cases in which the placenta is still functioning, to open the sac, remove the child, stitch the sac to the abdominal wall and then to drain for some days until the placental circulation being abrogated its removal would be possible. This method has had many advocates and lives have been saved by its practice, but it is not needful at this day to recount the associated dangers. Sepsis, hernia, fistula, etc., occur at once to the mind.

The question is further complicated by the statistics furnished by Sittner and others tending to show that the life of an extra-uterinely developed child can not be considered a negligible factor since a number of these children have shown a normal development and capacity for extrauterine existence. According to Taylor, this is particularly the case in ectopic development of the intraligamentary variety, and while it is to be recognized that in many instances the development of both varieties of ectopic children is poor and that pressure deformities, particularly in the intraabdominal forms, are common, the fact remains that the fetal life must be considered in deciding upon the time and form of the operative intervention. We have no hesitation in advising against the proposition to await viability in cases diagnosed before this period has been attained, since the dangers far exceed the advantages of this plan; but in the presence of an apparently healthy child at or near term, the question is of a different nature. Sittner, in his monograph, the best statistical work ever published upon the subject, calls attention to the fact that his collection of 126 cases proves that it is better to operate at once, rather than to await fetal death, and he states that comparative mortality statistics of the cases operated upon before and after fetal death do not prove that it is better to await the latter event, but simply show the number of women who died as the result of an operation, and avoid any reference to the number of women destroyed by the complications incident to the waiting policy. He claims also that the complete operation will be found to give the best results in a series of cases, and that the method of operation, and not the period at which it is done, will be found to decide the result. He advocates waiting in cases in which the child is viable when first seen until such a time that the possibility of extramaternnal existence is assured, provided always the condition of the mother remain satisfactory. He

would, other things being equal, operate a few weeks before term to avoid the possibility of a slightly premature labor which would destroy the child. Most careful watching is of course to be practised during this waiting period, by preference in a hospital. In support of this position he presents a series of 107 cases in which it was found that the mortality was 18.8 per cent. when the placenta was removed, while it was 57.4 per cent. when retained. These cases cover a period from 1813 to 1900. Further, if only those cases be used as a basis of comparison which have been reported between 1891 and 1900, it will be found that there is a mortality of but 10.8 per cent. with removal of the placenta, while its retention resulted in death in 34.5 per cent. of the cases.

After a rather careful study of recent as well as some of the earlier literature, a task which has been made easier by the paper of Sittner, we are forced to the belief that this author is right in his conclusions, and that better results are obtained by operation undertaken as soon as the diagnosis is made, except in those cases in which, the child being viable, it may seem advisable to await better fetal development. We also believe that a complete operation should at least be attempted in all cases. It, is of course, true that in some cases it will be manifestly impossible to remove the whole sac, but as much as possible should be removed, unless a distinct contraindication exists, such as the presence of infection or very extensive adhesions; with such complications of course, drainage should be carried out.

Even with the latter complication much more may be done by a skilled operator than was formerly thought possible, because of the greater development of technical skill and a better knowledge of the toilet of the peritoneum. The main danger in the operations performed during placental life is that of hemorrhage; but by the various methods suggested for its control, such as suture, ligature of the ovarian vessels before beginning enucleation, the temporary use of the tampon, aortic compression, resection of intestine or hysterectomy, the number of cases in the hands of a skilled operator demanding the incomplete operation will be found to be very small. Among the most valuable of the methods of hemostasis is that of aortic compression, and it is to be remembered that in its use it may not be enough to compress the vessel at its bifurcation, but that in cases in which there has been secondary implantation upon the ascending colon or small intestine, the area compressed may need to be at the height of

the second lumbar vertebra in order that the superior mesenteric artery may be included.

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THE DIAGNOSIS OF EXTRAUTERINE PREGNANCY.*

BY

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THE average practitioner rarely makes a diagnosis of extrauterine pregnancy unless he finds an exsanguinated woman in a state of extreme collapse which has appeared soon after a sudden attack of severe abdominal pain. He does not attempt to make a diagnosis of extrauterine pregnancy before either rupture or tubal abortion occurs, and for him the essential features of either of these conditions are always the classical text-book symptoms of shock, caused by a profuse uncontrolled hemorrhage from a ruptured ectopic gestation.

As a matter of fact, when the majority of extrauterine pregnancies are first seen by the physician, they do not present this typical text-book picture of collapse from concealed hemorrhage. The diagnosis is often obscure and can only be cleared up by a careful consideration of the patient's history, coupled with a rigid physical examination.

If these two statements, which I have just made be true then there must be many cases of extrauterine pregnancy in which the correct diagnosis is never made and the proper treatment never used.

I shall use but little time in trying to prove the truth of my first assertion. The majority of practitioners draw their ideas concerning the diagnosis of extrauterine pregnancy from text-books rather than from actual experience. Formerly almost all of the text-books taught that extreme shock and collapse

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were nearly always the immediate, inevitable consequence of tubal rupture or tubal abortion. The discussion of the subject in most of the recent text-books also would give the reader a similar impression. Moreover, any gynecologist, who has had many consultations in obscure cases of extrauterine pregnancy, must have been impressed by the conception of the average general practitioner regarding the symptoms of this condition.

My second postulate, that, contrary to this view, shock and collapse are not present in the majority of cases when first seen by the physician can also be substantiated, I think, by nearly every gynecologist who has given study to the subject of extrauterine pregnancy, and who has had the opportunity of operating on a large number of these cases. The observations which I was enabled to make during a hospital residence service of over four years confirmed me in this belief, and the statistics of the operative cases which I have had myself during the last three years have supported it.

Out of seventeen patients on whom I have operated for extrauterine pregnancy, but two presented the classical picture of shock and collapse. While some of the other patients were quite ill, none of them were in a state of shock when first seen. One patient, sent to the hospital with a diagnosis of cervical laceration, came in a day coach from a country town distant over 150 miles. Others of them came varying distances, and many were able to walk to the hospital or to my office.

The diagnosis of extrauterine pregnancy, therefore, is often much more difficult than the average practitioner supposes, or the average text-book would lead one to believe. In many cases the correct diagnosis can only be reached after the findings of a thorough physical examination have been compared with the subjective symptoms which a rigid cross-examination of the patient has elicited.

The diagnostic value of the various points which must be considered in studying a case of supposed extrauterine pregnancy I can best discuss by analyzing my own series of cases with reference to the aid which each of these respective symptoms gave me in making the diagnosis.

My series consists of seventeen cases. Three of them were unruptured tubal pregnancies; six of them had terminated in tubal abortion; in seven the tube had ruptured with free hemorrhage into the general peritoneal cavity; and in one case the

rupture had taken place into the broad ligament with the formation of an encapsulated hemorrhage.

In one case the diagnosis was not made, the finding of an unruptured tubal pregnancy on opening the abdomen being a complete surprise. In all other cases the correct diagnosis was made before operation.

The relative value of the various diagnostic points in the histories of these cases is as follows:

Repeated Extrauterine Pregnancy.—It has often been stated that a previous ectopic gestation on one side predisposes the patient to a second occurrence of the same trouble in the other tube.

This may be so in one of my cases. This patient had the right tube and ovary removed for extrauterine pregnancy three years before I operated on her for the same trouble in the left tube. While this point is not likely to be of value in many cases, still I believe that if the history of a previous extrauterine pregnancy is obtained in a suspected case it would be of quite marked significance.

Previous Sterility.—It is usually stated that extrauterine pregnancy occurs more frequently in women in whom the bearing of one or more children is followed by a certain period of sterility, this sterile period being in turn followed by the extrauterine pregnancy.

I believe that this is of much diagnostic value. Fifteen out of my seventeen cases had borne children before the extrauterine pregnancy occurred, and in eleven of these fifteen cases, there had been a period of sterility for five years or more.

Pelvic Inflammatory Disease.—In accordance with the theory that chronic inflammation of the tubes is one of the causes of extrauterine pregnancy, it is often stated that an old history of pelvic inflammatory disease is of diagnostic value in such cases.

In ten of my seventeen cases operation proved that there had been no pelvic inflammatory trouble; five of them showed definite evidence of past trouble of this nature; and in two the conditions at operation were such that it was impossible to tell.

I conclude, therefore, that the past history of pelvic inflammatory trouble is of only moderate significance in making a diagnosis.

Amenorrhœa.—An important diagnostic point is the fact that the patient has usually failed to menstruate at the proper time for one or more periods.

This was the case in fifteen of my patients. Two of the cases, however, had not missed a period. In one of these the last period ceased only sixteen days before the operation was performed. This was the case in which diagnosis was not made. The other patient was operated on twenty-four days after a normal period. The correct diagnosis was made before operation by consideration of the history and the physical findings.

Amenorrhea, when present, is of great significance in consideration with other symptoms. We must always be on our guard, however, for cases seen before it is time for the regular period and therefore giving no history of amenorrhea.

Character of the Pain.—The pain which is caused by a disturbance in the course of an extrauterine pregnancy is often quite typical; its sudden occurrence, its intensity, and lancinating character are very significant. However, I have found that it is not always possible to get a history of this classical attack of pain. All of the seven cases of ruptured tubal pregnancy gave histories of typical attacks of pain. Of the six cases of tubal abortion but one complained of very severe pain. While all of the other five cases of tubal abortion complained of pain, in none of them was it very severe or the type of pain which we would expect to find.

This symptom, therefore, when present is of great value. However, we must not expect in every case to get a typical history of sharp pain with sudden onset.

Collapse.—I have already stated my views regarding the value of collapse as a diagnostic symptom. In none of the cases of tubal abortion was collapse present when the patient was first seen by a physician. Five cases of ruptured tubal pregnancy with free bleeding into the peritoneal cavity had no collapse whatsoever. Collapse from concealed hemorrhage was present in but two of the entire series.

Nothing can be easier than the diagnosis of extrauterine pregnancy when a sudden attack of severe cutting pain is rapidly followed by extreme collapse. But the most important point which I would urge in this discussion is, that the majority of the cases of extrauterine pregnancy do not have the symptoms of collapse when first seen by the physician.

Bleeding.—I regard an irregular uterine hemorrhage as one of the most important single symptoms of this condition. It was present in all but two of my cases. The reasons that it was not found in these two cases are as follows: The first

case was an unruptured pregnancy, the second case was seen in collapse but a few hours after the rupture had occurred and the ovum probably did not die until the rupture occurred. Every other case had uterine bleeding.

Bleeding in this condition begins soon after the ovum dies. As this death of the ovum is often coincident with rupture or abortion, we find that bleeding usually appears soon after the onset of pain. This was the case in thirteen of the fifteen cases which had uterine hemorrhage.

Hemoglobin Estimation.—The presence of extreme anemia is not necessarily limited to cases with collapse. One of my patients had a hemoglobin of 28 per cent. at time of operation, although the rupture occurred one month before. In another case with a hemoglobin of 35 per cent. the rupture had taken place twenty-five days before operation.

The presence of extreme anemia is of diagnostic value in obscure cases. However, I shall make no further comment regarding it as the hemoglobin estimation was not made in every case in my series.

Physical Signs at Abdominal Examination.—The physical signs obtained at the examination of the abdomen may, of course, vary much.

In seven cases the abdominal examination was entirely negative, neither tenderness, rigidity, or masses being found.

There was slight abdominal tenderness in seven cases. In all of them the rupture had occurred several days before the abdomen was examined. Abdominal tenderness was extreme in three cases. It was distributed over the lower half of the abdomen, being most intense on the side of the rupture. Each of these three cases had ruptured tubal pregnancies with free hemorrhage into the abdominal cavity. Two of them had ruptured but a few hours before I saw them, and were in collapse at the time of examination.

Rigidity of the abdominal walls was present only in these three cases, which also had marked abdominal tenderness. It was extreme in the two cases in collapse.

Masses were found by abdominal palpation in five cases. In an encapsulated hematocele a mass was palpated above the symphysis. In a full-term pregnancy the child was mapped out. The other three cases were all cases of tubal abortions. The distended infiltrated tube and the clots surrounding it formed a tumor which could be felt through the abdominal walls.

Physical Signs Found at Pelvic Examination.—Pelvic masses were found at the vaginal examination of each patient. This is the only sign which was present alike in every case. The mass was unilateral in ten cases; in the others the entire pelvis was more or less filled by a mass formed by the ectopic gestation and adherent blood clots.

It is pertinent to add that sometimes the tenderness is so great that no masses can be made out in the pelvis until an examination is made under anesthesia.

Tenderness on vaginal examination is a variable symptom. In seven cases there was no vaginal tenderness, while in eight it was marked.

From the foregoing consideration it will be seen that there are no pathognomonic signs of extrauterine pregnancy. Excepting the presence of a mass in the pelvis, there was no one sign invariably present in each case.

The diagnosis can often be reached only by carefully cross-questioning the patient as to all her symptoms, and then weighing all the evidence both for and against ectopic gestation.

The following is a fairly typical history of many of my cases:

A woman of thirty-five, whose youngest child was seven years old, failed to menstruate at her regular period. About six weeks later she was suddenly seized with an acute pain in the left side of the lower abdomen. The pain was severe and cutting and the patient was obliged to lie down. In a few hours the pain became less severe. It continued, however, off and on for ten days when I first saw her. The day after she had the attack of pain uterine bleeding began. This was not profuse but had been constant. On examination a unilateral mass is found in the pelvis.

Now such a history as this is often not easy to get, especially if the woman is stupid, or of a phlegmatic or reticent disposition. In the first place she would complain mainly of the pain from which she is suffering at the time of consulting the physician, and would not give a good history of the acute character of its onset unless directly quizzed on that point. It is more than likely that she would fail to mention the period of amenorrhea, and if she spoke of the bleeding, which came on the day after her pain, she would speak of it as the appearance of her menstrual flow. Hence a clear picture of symptoms in the proper

chronological order could only be obtained by patient, careful questioning on the part of her physician.

The most important symptoms are, first, a period of amenorrhea followed by a sudden attack of severe abdominal pain with vaginal hemorrhage appearing soon after. If, in addition a unilateral mass is found in the pelvis, the great probability is that we have to deal with an extrauterine pregnancy which has either ruptured or undergone a tubal abortion.

Diagnosis before rupture or tubal abortion occurs will, of course, only be made when some symptom causes the physician to make a pelvic examination. In two of my cases the diagnosis was made before rupture. In each case the ovum had become loosened somewhat from the tubal wall and some blood had leaked out through the end of the tube into the abdominal cavity. The pain from the peritoneal irritation caused each patient to consult a physician.

This paper is already too long. The very interesting question of differential diagnosis I shall have to omit entirely, together with the detailed discussion of many other points.

I hope, however, that I have been able to make clear my point that the diagnosis of extrauterine pregnancy is no simple matter. I believe that such cases are far more frequent than we suppose in many parts of the country, and that the number of cases which we recognize will vary directly with the amount of care which we put into the study of each suspected case.

THE THERAPEUTIC MEASURES OF VALUE IN CON- VALESCENCE FROM ABDOMINAL AND PELVIC OPERATIONS.*

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OTHER things equal, the surgeon who guides his patient through convalescence with a maximum of common-sense and a minimum of drug is going to achieve the greatest success. The deductions I proceed to state are the result of observation extending over fifteen years, during which my work has been exclusively devoted to the abdomen and the pelvis. They are

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based on observation derived from a large public hospital service and from private material operated upon in one or another of the hospitals and sanitariums with which it is my privilege to be connected.

The subject is of necessity envisaged from the standpoint as to whether the operation has been one of *election* or of the *emergency* type.

Where the operation is one of election, ample time exists for cleansing the great sewers of the body, the kidneys and the intestinal canal, for estimating the sufficiency and the quality of the urinary secretion, for getting the skin in hygienic condition, and for securing that nerve force or morale on the part of the subject which goes so far towards the obtaining of a calm convalescence. At the time of the operation, the surgeon who proceeds with the rapid deliberation born of confidence in his knowledge, who wastes as little time as is desirable in order to accomplish his surgical aim, is the man who is able to show the lowest mortality rate. The peritoneum is able to withstand almost every insult except the protracted mechanical.

Let us consider the sequelæ as they offer.

Nausea and Vomiting.—Any one who has been sea-sick knows the agony of dry retching. I am therefore not at all in sympathy with those who deprive the subject of water. I allow all that is desired. If not retained the stomach is washed out and thus, frequently, it will be unnecessary to resort to gastric lavage. I forbid ice, and as for drug I have tried them all, iodin in small doses, fractional doses of Fowler's solution, phenic acid, cocain, and they have failed me. The vomiting is one of the means Nature utilizes for getting the excess of ether out of the system. If, after twenty-four hours, nausea and vomiting continue, then gastric lavage becomes indicated. As soon as these symptoms are in abeyance I allow broths or kumyss, *but never milk*. This food is the chief cause of intestinal fermentation which gives rise to a distressing symptom—tyimpanites.

Shock.—The best remedy against shock is a full dose of morphia hypodermatically and this also is our mainstay in differentiating nervous shock from that due to hemorrhage. It may be stated that if betterment on the part of the symptoms do not yield to the morphia we are dealing usually with internal hemorrhage. The above is the only indication for morphia or any derivative of opium except codein. This derivative I use in two grain suppositories repeated every five to six hours for

pain. It neither paralyzes peristalsis of the intestines nor does it interfere with the digestive tract. In the event of my deeming the pain complained of as neurotic, I always precede the suppository by a hypodermatic injection of sterile water. Often the restful sleep thus secured is an object lesson.

Thirst.—No better means is at our disposal for overcoming this symptom than the instillation into the bowel of sterile salt solution at a temperature of 110.

The Kidneys.—Suppression or insufficiency is best met by the continuous irrigation of the bowel with hot salt solution. The subject is placed upon the side, a Kemp tube is inserted into the rectum and from a gravity syringe the salt solution is allowed to run in and out for one hour. This is repeated every two hours without disturbing the subject in the slightest. Usually the pores of the skin are brought into action, thus relieving the strain on the kidneys, peristalsis of the intestines is established, again relieving the kidneys, and frequently what appears a forlorn hope becomes a victory. The so-called diuretics have no place in my management. The potass. salts, I look upon as direct irritants to the kidneys. Their administration is like whipping or spurring a tired horse. This salt irrigation, further, is a valuable means of meeting shock, and renders unnecessary often the use of strychnia, musk, ether and camphor, the favorites with many but by me reserved for strict emergency.

The Temperature and the Pulse.—A normal pulse, checking this normal by our knowledge of that which is usual to the individual, and a concomitant temperature are of good omen. A pulse and temperature, when elevated, if in proportion, means to me inflammatory complication. A rapid pulse and a low temperature, is indicative of infection. It should be stated that my temperatures are always taken by rectum where the excess is over 100 by mouth.

Where the pulse and temperature are equivalent, so to speak, we need have no special concern. The phenomenon may be looked upon as one of Nature's secret methods of meeting an indication, the inflammation. The well-being of the subject is here subserved, not through drugs but by the application of the ice bag or coil on the abdomen, associated with frequent alcohol sponging. If the skin be very dry and the kidneys insufficient that ancient but blessed formula of our forefathers, aconite, ammonium acetate and spirits of nitrous ether, is of exceeding value. I have no use, nor have I patience with those who use

the various drugs ending in "IN" which German manufacturers have sent us for the purpose of controlling fever. They may control but at the same time they depress. Neither will I tolerate the "*ias*" and the "*ols*" which American manufacturers offer the profession. As antineuralgics they have value but the United States Pharmacopeia gives us their equivalent.

Where the pulse is rapid in proportion to the temperature, we are facing infection and here I use alcohol freely. A good whiskey, or, if the kidneys are insufficient a good gin. I endeavor to support the subject whilst his economy is fighting the germs which have gained entrance. Here, again, instillation of salt into the bowel, or into the cellular tissue of the back, or, in woman, under the mammary gland, is an adjuvant measure of great value. Under these conditions there are certain cardiac tonics which I deem of value. The salts of caffein under the skin are stimulants. If the heart flags digitalis or spartein enters into my therapeutic armamentarium. I much prefer a fresh infusion of digitalis because it is at the same time diuretic without being irritant to the kidneys.

There is probably no drug given, irrationally to a greater extent than nitro-glycerin. It is only indicated where the tension pulse exists, and then in full dosage under the skin repeated frequently since its effect is evanescent. Thus I order every hour one-fiftieth of a grain, but I do not use the tablets since they are unstable but the officinal solution. In the full bounding pulse, I go back to our forefather's day and I resort to venesection. This may be heresy, but it is backed by ample clinical experience. As regards strychnia, where used at all it is in large doses under the skin, thus one-twentieth of a grain in adults repeated every three hours, being on the watch for toxic symptoms. I cannot help feeling, however, that in the main strychnia is abused.

It will be noted that for the administration of such drugs as are indicated, I select the hypodermatic or the rectal route. The stomach is required for nourishment. When this organ is irritable, it is irrational to place either food or drink in it.

It simply rejects. What the organ needs is rest.

The Intestinal Tract.—The operation having been one of election, I see no utility in the hammer and tongs methods which hurry in salts or cascara or other nauseant drugs. The intestines have been amply cleansed before the operation and nothing but water or assimilable broths have entered it for the first

thirty-six hours. Therefore until the subject becomes uncomfortable or cannot pass the accumulating gas I do not give a laxative. After thirty-six hours a simple high enema, or a glycerin enema, two ounces to the pint, will stimulate peristalsis. The evening of the third day, where the stomach is tolerant, I find that a dram or two of the compound licorice powder is of value. Calomel in fractional or in large dosage I find depressing and often nauseating. If the stomach at the end of thirty-six hours is still irritable a favorite enema with me is half an ounce of inspissated ox-gall and two ounces of glycerin added to one pint of a saturated solution of salts. This is to be given high. Where there is much intestinal fermentation, an enema of the milk of asafetida is valuable although disagreeable on account of its odor. In obstinate or torpid intestinal tract, ileus having been differentiated, a pint of ordinary coal oil thrown high acts frequently like magic.

In beginning tympanites, which I consider spastic, due to spasm, hyoscin hydrobromate is my sheet anchor. I order it in fiftieth of a grain dosage, under the skin, repeated hourly until the pupils are large. As a rule, unless there be ileus, the spasm relaxes and the subject expels the gas. Far more rational is the use of this drug than the pouring of salts or cascara into the irritable stomach, or the tiring of the subject by repeated enemata.

The intestines, having been thoroughly evacuated, the subject needs food, and other things equal, I allow that which is craved.

The Cerebral Centers.—Excitement will often yield to a full dose of hyoscin under the skin. Where congestion exists, if the ice cloths do not answer, I order the bromide of soda. Sleeplessness yields nicely to chloral. I find little use for veronal or trional or other “*als*” and “*ins.*” But then, you see, I am old fashioned and stick to those domestic ethical drugs which our forefathers had at a time when pharmaceutical manufacturers had not multiplied drugs almost out of proportion to those in the Pharmacopeia and too often very poor imitations.

The Skin.—Attention to the wide surface of the skin, a means of relieving strain upon the kidneys and of carrying off waste products, is secured by daily sponge baths and alcohol rubs.

The Abdominal Incision.—When through error in cleanliness or faulty suture material, the incision presents evidence of infection, I open it wide, mop it out with pure phenic acid and after a minute or so apply 60 per cent. alcohol. The consecu-

tive dressing is gauze saturated in 1 per cent. carbolic. Thus mural abscesses are limited in extent.

Posture of the Subject.—Whenever the character of the pulse does not contraindicate, it is of advantage to have the subject turned from side to side after the operation, for thus we prevent hypostatic congestion of the base of the lungs. After twenty-four hours, where, again, the pulse does not contraindicate, I allow my patient to assume any desired position short of getting out of bed. In reference to this I have become more liberal with experience. In subjects exhausted by the disease which demanded the operation it is still of distinct advantage to require protracted rest in bed, not, however, because of the operation, but because of the debilitated state of the subject before operation. Otherwise, I am allowing my operative cases to get out of bed on or about the sixteenth day. Interval appendix cases may be allowed this privilege within a week.

As regards the abdominal incision, it is fully ten years since I have tolerated the so-called abdominal supporter. This is a misnomer. The bandage weakens the muscles. They need action in order to get strong. I may state that I do not see postoperative hernia, except in instances where the incision has suppurated.

A few words in reference to operations which are not of election. The cardinal rules above stated apply. But where I have leaway, I order a large dose of calomel and soda into the stomach two hours before the administration of the anesthetic and I feel safer about the third day when gastric irritability or rectal intolerance prevents the administration of drugs or enemata. I have gotten in ahead so to speak. Whenever I suspect pus or deem that much handling of the intestines will be requisite, I order under the skin eserine or hyoscin, and I repeat at intervals of two to three hours. It has seemed to me that thus I avoid tympanites, and often secure a spontaneous evacuation from the bowels within thirty-six hours.

The above measures, associated with simple technic, few assistants and nurses, cleanliness and rapidity of operating, have enabled me for years, in unselected cases, to keep my mortality rate at or under 2 per cent. And I would state that to-day so-called gynecology includes not alone the abdomen of woman but also of man.

As regards the pelvis operations, the measures outlined are applicable and I desire only to add that in pus cases I aim at

securing the freest surgical drainage. The packing with gauze in favor with many I do not like because after twenty-four hours the gauze checks drainage. There is an apparent drainage but this is serum consecutive to applying a foreign body against a raw surface. I seek the aid of gravity through the position of the patient, and only pack tightly with gauze when my aim is to control bleeding. Secure a wide opening and insert drain tubes through which irrigation with salt solution may be administered or 60 per cent. alcohol and the result is far better than when the subject's pelvis is stuffed firmly with gauze.

116 WEST SEVENTY-SIXTH STREET.

THE NEGLECT OF PLASTIC SURGERY ABOUT THE PELVIC OUTLET.*

BY

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Rochester, N. Y.

It is not my intention in this brief paper to describe a new operation for the repair of a lacerated cervix or a torn pelvic floor, nor do I intend to describe a long series of cases that I have operated upon, but I should like to be able to reawaken a little more interest in this very important subject which I have chosen for this evening. Injuries about the pelvic outlet are only too common and they often cause much suffering. Childbearing is the most important function of woman, and to prevent any after-trouble from this process of nature is one of our most sacred duties as physicians and surgeons. There is no reason why a woman after bearing a child should have any poorer health than she had before she had one, and yet how often is the contrary the fact.

A woman came to me a few days ago complaining of many things: her head ached and her back ached and she felt weak all the time; if she tried to do a small washing, she was all tired out for two or three days; as she walked around, she felt as if her "insides" were dropping out; when she sat down she had to cross her legs to be comfortable. Her bowels were constipated and, when she went to stool, she had to strain and she felt as if the feces were passing from the vagina instead of from the anus. When she felt the desire to urinate, she had to move quickly or she could not reach the closet soon enough; she could not tell when she had finished, and often, when she thought the bladder empty, she found that as soon as she took a step she had to go

* Read before the Rochester Pathological Society, April 23, 1908.

back and could pass more urine. At times she had "spells," she would throw herself around and her family and friends could not hold her; then she would say she did not remember anything she had done. These attacks were truly hysterical in type. Her menstrual periods were painful and profuse, came every three weeks and lasted seven or eight days. She had had three children and three miscarriage. Two of her babies were breech presentations. After her first baby some stitches had been taken. She had been losing weight lately, her tongue was coated and after her meals she had a feeling of heaviness and oppression in the epigastrium. I put her on the table to examine her, and, as soon as her knees dropped apart and the labiæ were separated, it was seen that the vagina was wide open with mucous membrane rolling out both above and below. If you introduced your finger into the vagina and pressed backwards there was little or no sense of resistance. The bands of muscles which can be so plainly felt around the vaginal opening in a woman who has never borne a child seemed to have disappeared; the bag had lost its string and was turning inside out. With one finger in the rectum and one in the vagina it seemed as if the two fingers would almost touch, there was only a thin layer between them. The anus looked as if it was dropping away from the symphysis. Further up in the vagina the cervix was felt, it was large and hard and seemed to be dented on each side; it pointed in the axis of the vagina and was not far from the entrance. The os was partially open and through the speculum mucus could be seen coming from it. There was a red congested area around it that looked like an erosion. Through bimanual examination the fundus of the uterus could be felt back in the hollow of the sacrum, and the whole uterus was large and heavy. The diagnosis was easy. The woman was suffering from a torn cervix and pelvic floor with retroversion and subinvolution of the uterus.

Such a case is not rare; in fact, as I have been reading over these symptoms I do not doubt that each of you has said to himself, "I have had many such a one come into my office." That is not the point, you have had the cases, and you have made the diagnoses correctly, I hope, but how many of these cases have you cured? And, more important still, how many have each of you been responsible for in the first place? That is, how many women, whom you have taken care of in confinement, have you allowed to go out from your care at the end of six weeks or sooner with injuries which in time will produce just the condition that I

have described? A physician is not always to blame for failing to cure a case of this kind when she comes to him, for the patient will often refuse to allow the necessary operation to be performed (or I, at least, have often failed to persuade them), but we certainly are to blame if we allowed the injury to go unrepaired in the first place, for I have never known a woman at the time the child was born to refuse to allow the necessary stitches to be taken. It is sometimes impossible to prevent a tear of the cervix or pelvic floor, but it is never impossible to repair them. As a rule, the patient knows this, too, and though she may not blame you at the time, still she is pretty sure to in the end. Many a one has said to me upon being told that she was torn: "Well, why didn't my doctor sew me up in the first place? He ought to have. He never even told me I was torn!" After a long and tedious labor the patient is tired out and the doctor is tired out, and it is a great temptation to argue that this is only a little tear and does not need a stitch; but if the tear involves any of the muscles it must be sutured, and if we fail to do this we are guilty of neglect.

To prevent a tear is better than to cure it, and every possible precaution should be taken. Dr. G. H. Noble of Atlanta, (*Am. J. of Obs.*, Vol. xlv, p. 243,) advises the use of strips of adhesive plaster to protect the perineum. Dr. Edgar, of the Bellevue Maternity (*Am. J. of Obs.*, Vol. I, p. 50), speaks very favorably of digital stretching; he says: "From an extended clinical experience extending over a number of years, I can speak most enthusiastically of the preliminary digital stretching of the pelvic outlet in primiparæ, and especially in elderly primiparæ as a prophylactic measure in perineal protection. Of course, the method has been in use for years, but I would urge its more extended use in those cases in which the parturient outlet and the lower third of the vagina are small and rigid. I have obtained surprisingly good results by passing two fingers, palmar surface down, into the parturient outlet and making intermittent backward and lateral massage-like pressure. The motion is a sort of eccentric massage.

"I am accustomed to use two fingers of one rather than of both hands for the purpose. The assistance of ether or chloroform is most valuable. Fifteen to twenty minutes of this firm outward and backward rotary massage-like stretching will usually sufficiently enlarge the most rigid parturient outlet."

Dr. Apfelstedt, in the *Berlin Klinische Woche*. (Nov. 20, 1906), ascribes to the perineal muscles an active instead of a passive part

in labor, he thinks that they direct the vertex forward under the symphysis, and then at the moment when the greatest circumference of the head is surrounded by the vulva the levator pulls the soft parts over the head by an active contraction of its fibres. In accordance with this physiology pressure upon the outside of the perineum harms rather than helps the mechanism of labor as it thins the tissues and deprives them of blood. His method is described as follows: "The patient lies on the back with knees spread (*Am. J. of Obs.*, Vol. liii, p. 248). The accoucheur sits on the side of the bed to the left of the patient, supported on the left forearm. The points of four fingers of the left hand lie behind the perineum, two on each side of the opening. Two fingers of the right hand lie with the points in the fork between the back of the head and the pubis. At each pain the right fingers press the soft parts under the symphysis back so as to reach the neck of the child without pressing the head up. The fingers of the left hand endeavor to grasp the forehead so as to aid the pressure from above during the contraction, the two hands controlling the motions of the head between them, and lifting the head upward and forward in the direction of the pelvic outlet. As the head descends the left fingers pass over the face toward the chin and the right into the neck, and as the head passes out rotation of the shoulders is facilitated."

Whether any of these methods are used or not, it is undeniably of the greatest importance that very great care should be taken at this stage of labor to prevent the too rapid and forcible expulsion of the child and to direct the vertex in the natural direction of the outlet, especially if forceps are being used. After the head is delivered it is frequently thought that now the trouble is all over and little attention is paid to the shoulders. This is a great mistake as the shoulders will often start a tear in a pelvic floor that has previously escaped or will change a small tear into a serious one. The delivery of the shoulders should be managed just as scientifically as that of the head.

After the head is delivered time must be given for the shoulders to rotate, as this brings the longer transverse diameter of the shoulders so that it corresponds with the long axis of the pelvic outlet. The posterior shoulder should be delivered first, the anterior being crowded up behind the symphysis and gently held there until the posterior passes out spontaneously, thus avoiding manual extraction and lessening the liability to rupture. While the anterior shoulder is still held up behind the

symphysis, the opposite hand and arm will usually appear at the vulva, and may be safely delivered by flexion, then gentle traction downwards on this arm will draw the anterior shoulder out from behind the pubis and it will be delivered easily without injuring the perineum or pelvic floor.

If, in spite of all precautions, a tear occurs, it should be sutured at once. Some recommend that the sutures be placed even while you are waiting to deliver the placenta, and left long, and then tied as soon as the placenta is outside. I believe in using silk-worm gut in the immediate operation the same as I would in the later, and introducing the sutures inside the vagina just as in a regular Emmet operation. Cleanse the raw surface carefully and dry them before tying the sutures; do not draw the sutures too tight as they cut out easily, but make a careful coaptation of the two sides and be sure that the ends of the torn muscles are caught in the sutures.

Douches in the puerperium are not in great favor nowadays, but I have gotten better union by giving a simple boric acid douche once or twice a day than in any other way. Without a douche the lochia remains longer in the vagina and seems to work its way between the stitches so that I have often failed to get good union when I simply left the parts to themselves. However, unless my nurse is a very competent one, I always give the douches myself, turning the patient across the bed and using a Kelly pad. In this way you can see very nicely how everything looks and can avoid any injury to the torn portion. Always dry the sutures with cotton after the douche, and dust with dry boracic acid. This usually gives very good results, but if you should fail to get good union, don't be afraid to tell the patient and urge that new sutures be applied either at once or a little later. If in every case of labor the above-mentioned precautions have been taken, both to prevent lacerations and to repair them if they do occur, you may be sure that you are not the one who is sending these cases, such as I have outlined, to the gynecologist.

But it is not only our duty to prevent these injuries, but also to recognize the after-results, when patients come in to us suffering from them years afterwards. It is surprising to see how many of these cases are overlooked or at least are not cured. Frequently patients have come to me saying they have been treated for "womb trouble" varying lengths of time by applications, tampons, douches, etc., but who were never told that they had tears which were really responsible for the whole trouble. They

knew that they had a chronic inflammation of the womb and cervix producing a constant leucorrhea, but they did not know and had never been told that it was a cervical tear that had caused the subinvolution of the uterus and started the whole trouble, and that until that was healed the other trouble would persist. They knew that the womb was out of place, but they did not know that that was because the muscles of the pelvic floor, which naturally give it support, had been torn. I am afraid that with many there is too much palliative office treatment and too little operative repair of the trouble. Of course, if the patient refuses operation the doctor is not to blame, but if he encourages her to think that local treatments will cure her and that an operation is not necessary, then he is very much to blame. Local treatment may relieve a patient temporarily, and in fact it is often necessary as a preliminary to operation, but it will never take the place of an operation if there is an old tear present.

An injury to the pelvic floor is more likely to be overlooked than one to the cervix. I have had several patients come to me who had had a cervical tear repaired, but whose perineum had not been touched, although it showed all the typical signs of a tear. The diagnosis of a laceration of the pelvic floor is not difficult. All the symptoms enumerated in the case quoted above will not be present in every case, but there will be enough to make the diagnosis certain. The rectocele and cystocele may not be visible, but if the patient bears down the anus will seem to drop away from the pelvis and the posterior vaginal wall will roll out. A finger in the rectum and one in the vagina shows nothing but two layers of mucous membrane left between the two. Pressure downward and outward in the sulci fails to find that distinct band so easily felt in the nullipara. If you prick the vulva of an uninjured woman with a needle, a reflex muscular action is excited; the anus is drawn upward and forward, the perineum shortened and the mouth of the vagina more tightly closed by the action of the perineal muscles. If these muscles are injured this reflex action will be absent; the woman will simply draw away when pricked. These signs are plain. There is no excuse for overlooking them.

As to the actual operation to be performed in old cases of a ruptured pelvic floor, there is some difference of opinion. The literature of the last five years contains accounts of several different operations. In all of them the great stress is laid upon catching the ends of the broken muscles in the sutures. If that is

done and if a careful asepsis is practised, a good result will be obtained. Personally I prefer the regular Emmet operation to any other, and I think the shotted silk-worm gut suture by far the best. It is the most easily and completely sterilized; it holds the tissues as in a splint and does not stretch and let the ends of the muscles drop apart; it stays until removed.

If a man is a good mechanic and thoroughly understands Emmet's principles, he will be perfectly satisfied to perform the operation as Emmet performed it. The man who has to make this modification and that modification acknowledges his inability to really master the operation. His modifications are a sign of weakness not of strength.

There are many patients to be cured, the operation is simple and not dangerous, and yet I believe that comparatively few men in this city do a regular Emmet operation. Not long ago at one of the largest hospitals here, after I had finished an Emmet and the perineum came up nicely, the posterior vaginal wall in contact with the anterior, the interne was complimenting me upon the result, and he said, "You know that is the first Emmet I have seen since I have been on duty here?" He was just finishing his service. There had only been three or four perineums repaired in the hospital during three months. That would make twelve a year, possibly fifty or sixty in all the hospitals in this city taken together. If these figures are anything like correct, it simply shows that the work is not being done. Why, in a city of 180,000 inhabitants three or four hundred or more ought to be done every year, and judging from the number of torn perineums that I have seen in my small practice, I believe many more than that.

This city is not the only one to blame, but all over this country everyone seems to be interested in abdominal surgery. Uterine and ovarian surgery, appendiceal surgery, gall-bladder surgery, gastric surgery have all been taking such rapid strides that they seem to have attracted the attention of the whole profession; every one is looking at them, and plastic surgery has been neglected. It seems to be forgotten and is becoming a lost art. It behooves us to think of Marion Sims and Thomas Emmet, remember what a boon they wrought for womankind, and how their fame spread therefrom around the world. And yet, to-day, while one of them is still living, we are forgetting how they taught us to work. Who can repair a vesico-vaginal fistula with the skill of Sims? or who can repair the pelvic floor as Em-

met used to? Here is a great field, a wonderful opportunity for any one of us. Let some of our great men arouse their latent energy and turn their attention to this subject of plastic surgery. It well deserves the best that can be given.

20 GROVE PLACE.

CHONDRODYSTROPIA FÆTALIS, WITH REPORT OF A CASE*

BY

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Consulting Gynecologist to the Hospital of St. Anthony De Padua, Chicago, Ill.
(With One Illustration.)

CHONDRODYSTROPIA FÆTALIS (Kaufman), achondroplasia (Parrot), also formerly referred to as fetal rickets, is a rare form of dwarfism,¹ of ancient origin, but has not been given the prominence that the condition warrants. This is probably due to the fact that the majority of cases are still-born, or survive but a short time. This fact prompts me to report the following case:

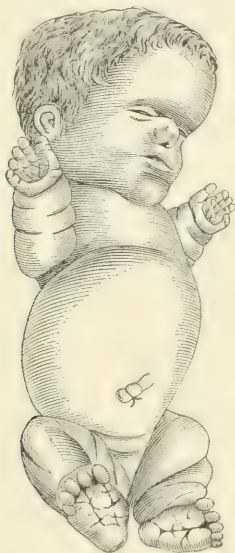
Mrs. F. B., aged twenty-four, multipara, a large well built woman, had always enjoyed the best of health. I attended her in her last confinement, which was normal and easy. I was called at 8 P. M. September 28, 1907, and was then informed by the midwife in attendance that the patient had been in labor twenty-four hours. The waters had broken early that morning. The labor pains were very strong, but the head, which was engaged, did not advance. Upon examination, I found that the caput was so marked that a diagnosis as to position could not be made. Forceps were applied, and after considerable difficulty, a large head was extracted. The presenting part proved to be a brow. Thinking I would have considerable difficulty with the shoulders, owing to the large size of the head, I was astonished when a small arm presented, which was quickly followed by a long body and very short legs. The perineum which is usually lacerated to a marked extent in all brow presentations, did not escape in this case, and was repaired with deep silk-worm gut sutures. No difficulty was experienced with delivering the placenta, which was rather small. The cord was very short, measuring about 27 cm. I could demonstrate no change on microscopical examination of the placenta.

The fetus, which was a female, was dead and presented the following peculiarities: The head was abnormally large. There

* Read before the Douglas Park Branch of the Chicago Medical Society.

was an abundance of glossy hair. A large caput had formed on the brow. The nose had a marked depression at the root, with a deep groove at the tip. The lips were very thick.

The general appearance of the face was not that of an infant, but rather that of an aged person. The abdomen was protuberant, but was of normal length. The arms and legs were very short. The greatest amount of shortening appeared to be in the humerus and femur. The skin and adipose tissue on both



arms and legs lay in heavy folds. There seemed to be an over-development of skin for the amount of surface which it covered. The ribs were beaded, the fingers and toes were short and all of about the same length. Lordosis was not marked in this case. The center of the body, which normally corresponds with, or is below the umbilicus, was above the ensiform cartilage.

No history of syphilis could be obtained on either side, also no history of dwarfs. The mother of this chondrodystrophic fetus is a large well-built German woman of healthy appearance, 5 feet, 9 inches in height and weighing 170 pounds. The father,

also is in the best of health, measuring 5 feet, 11 inches in height and weighing 185 pounds.

The mother said that she felt exceptionally well during the entire period of gestation, but noticed that the fetal movements were rather weak as compared with those of her first child. The usual explanation of maternal impression was also missing from the mother, although the father ventured the information that his wife witnessed a performance in one of our summer gardens, where a number of dwarfs were the principal feature.

Kaufmann, who first gave us the name, chondrodystrophia fœtalis, differentiates three forms, chondrodystrophia hypoplastica, chondrodystrophia malacia, and chondrodystrophia hyperplastica. The hypoplastic form is the most frequent of the three.

Nothing definite is known of the etiology of chondrodystrophia fœtalis, and the only fact which seems clear in its pathology is that there exists a more or less complete inhibition of the normal row formation of the proliferating cartilage cells in the preparatory stage of ossification. It resembles rickets on the one hand, and cretinism on the other, but is readily distinguishable from both, although its close relationship to rickets probably accounts for the occurrence of a certain number of cases in which characteristic features of the two disorders are more or less blended.

The most prominent symptoms of chondrodystrophia are congenital origin, an abnormally large vault of the cranium, depression of the root of the nose, arrested development of the long bones of the extremities with exaggeration of the normal curves, normal development of the trunk, beaded ribs and enlargement of the ends of the long bones. Decentralization of the midpoint of the body, which is invariably and persistently above and not below the umbilicus, characteristic wheel-spoke appearance of the hands, excess of adipose tissue, protuberant abdomen, lordosis, smooth, pliable skin, abundance of glossy hair, normal mental condition, a tendency to other malformation, high arched palate and inguinal hernia.

Chondrodystrophia fœtalis must not be confounded with rickets. The child is born healthy in rickets. The skull is characterized by hypertropic bosses and atropic craniotabes. The chest is contracted and the ribs deformed; the spine and legs curved; dentition and speech may be delayed. The enlargement of the ends of the long bones in rickets is due to the abnormal development of the epiphyseal cartilage. In chondrodystrophia it is due to periosteal overgrowth. Microscopically, in rickets

the proliferating zone is much wider than normal. In chondrodystrophia it is narrower than normal. In rickets, vascularization is marked. In chondrodystrophia, it is not marked.

That chondrodystrophia has nothing in common with cretinism is shown by the fact that the dwarfs which reach adult age are far from idiotic. On the contrary they are exceedingly clever, as many of them are performers in museums, summer gardens and other places of amusement, and are above the average in intelligence.

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 992 WEST TWENTY-SECOND STREET.

TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

Meeting of April 14, 1908.

The President, EDWIN B. CRAGIN, M. D., in the Chair.

DR. BROOKS H. WELLS reported the following cases and presented the specimens:

- I. Hysterectomy for carcinoma seven years after intestinal resection for carcinoma.
- II. Early ectopic pregnancy.
- III. Carcinoma of appendix in girl of twenty.

HYSTERECTOMY FOR CARCINOMA SEVEN YEARS AFTER INTESTINAL RESECTION FOR CARCINOMA.

At the meeting of this Society in March, 1901 (*Amer. Jour. Obst.*, Vol. xliii, page 844), I reported the case of Mrs. A., then thirty-nine years of age, from whom I had removed a far-advanced carcinoma of the ileo-cecal region which had apparently begun at the appendix, together with nine inches of large and small intestine, glands and mesentery. The patient made an uneventful recovery from this operation and remained perfectly well until three months ago when she began to have free bleeding from the vagina.

On March 19, she called the attention of her physician, Dr. Joseph Lynn Hetzel, of Southport, Conn., to her condition.

He found on examination a foul, necrotic, firm mass projecting from the cervix uteri into the vagina and at once sent her to me for operation. She was admitted to my service at the Polyclinic on March 21. She was thin, pale and septic-looking, with a pulse of 92 and temperature of 100° F. Heart and lungs were normal. Liver not enlarged. Gall-bladder not palpable. Abdomen relaxed and flabby, but with no nodules or indurations anywhere; that is, with no evidence of any recurrence or metastasis of the carcinoma of the intestine removed in 1901. There was a foul, bloody discharge from the vagina, and projecting from the os uteri, which was dilated to a diameter of an inch and a half, was a firm, round, necrotic mass which felt and looked like a sloughing fibroid. On March 23, the patient was anesthetized and the mass removed. It was found to spring from a broad pedicle at the fundus of the uterus. The cavity of the uterus and the vagina were then washed out with a watery solution of iodine and a vaginal hysterectomy done with clamps, this technic being chosen to save time because of the weak, septic condition of the patient and to insure as wide as possible destruction of the parametrium. The patient's convalescence was uneventful and she returned to her home in Connecticut on the eighteenth day after operation.

The case seems interesting because of the apparently complete absence of recurrence of the intestinal cancer after seven years. Also, should the cancer of the uterus be considered as a metastasis or an independent new focus of carcinoma?

Plate I is from a photograph made by Dr. Jaches at the Loomis Laboratory and shows adeno-carcinoma undergoing colloid degeneration. Fig. 1, Plate II, shows carcinoma of uterus removed at second operation.

DISCUSSION.

DR. SAVIDGE.—I would like to ask Dr. Wells about the first operation. What was the condition of the patient's health—had there been any cachexia?

DR. WELLS.—The first operation was done as a forlorn hope. The patient was seen in a condition of extreme depression with fecal vomiting. A very bad prognosis was given. The operation was apparently an inadequate one. About nine inches of large and small intestine and some enlarged glands were removed. There were many more enlarged glands. Those removed were every one carcinomatous. The patient, in spite of the seemingly desperate condition, recovered and the enlarged glands which could be felt several months after operation entirely disappeared.

DR. SAVIDGE.—What was the condition at the second operation?

DR. WELLS.—She had been in very good condition with a very good color until she began to flow, and then she ran down rapidly.

DR. VINEBERG.—I would like to ask Dr. Wells whether the diagnosis in the first case—the pathological diagnosis—was given by one you could thoroughly rely on?

PLATE I

AMERICAN JOURNAL OF OBSTETRICS
AND
DISEASES OF WOMEN AND CHILDREN
JUNE, 1908.



WELLS—ADENOCARCINOMA OF CECUM.

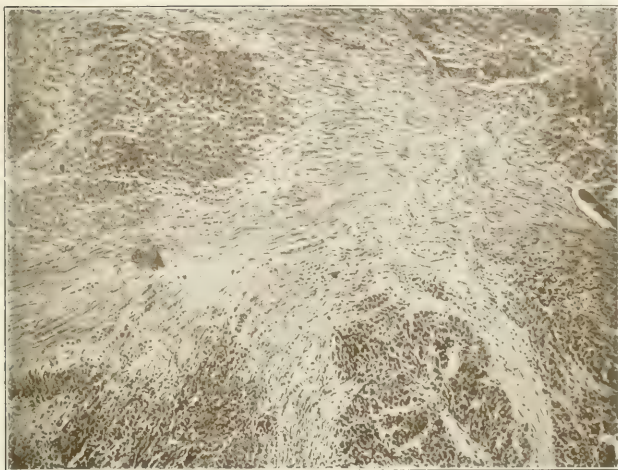


FIG. 1.

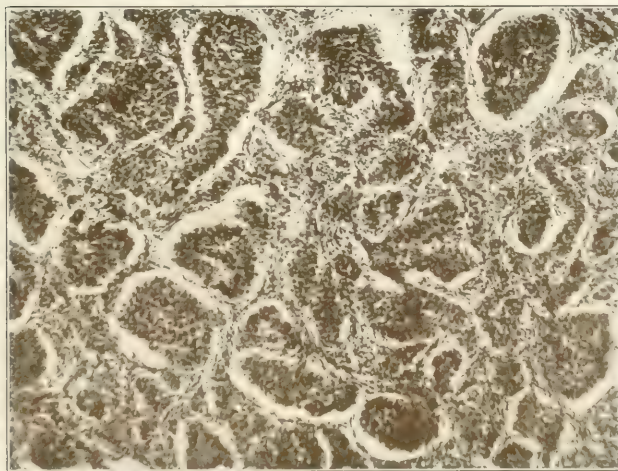


FIG. 2.

DR. WELLS.—Yes. It was made by Dr. Jeffries of the Polyclinic, and I have both slides. They show typical carcinoma.

DR. STEARNS.—What Dr. Wells says about the condition after operation makes me think of a similar case I had a couple of months ago, and which I have been unable to explain in any way. A woman came in with carcinoma of the cervix apparently just beginning. She was not in very good shape for operation, so was put on tonics and liberal diet for two weeks. The next time I saw her, about ten days later, I was surprised to find the entire cervix involved. A vaginal hysterectomy was performed, curetting first, and it was apparently impossible to get clear of the fungating growth. A wonderful thing to me was the fact that two weeks after operation the vault of the vagina had entirely closed in and healed as perfectly as if the operation had been for a benign growth. The microscope showed the growth to be a typical carcinoma.

DR. VINEBERG.—Lomer, of Hamburg, has drawn attention to the fact that in some of these cases even if you do not remove all the carcinomatous tissue, the system will sometimes get rid of the remainder, and he has reported a few cases of undoubted carcinoma in which the operation was not radical or complete and the patients got well and remained well for a long time. I asked Dr. Wells the question because it is pretty well known that from inflammatory processes you will get conditions apparently looking very much like malignant growth. I remember opening the abdomen of a patient about four years ago. We found a mass on the left side about the size of the fist. She had had all the symptoms of carcinoma: cachexia, loss of weight and she had constipation almost to the complete obstruction of the bowels. I made an examination; I found the intestines matted together and the mesenteric glands enlarged. I closed the abdomen, looking upon the case as inoperable. The patient recovered. The mass disappeared, and I have come to the conclusion that it was merely an inflammatory mass. In another case a growth, which to the naked eye looked malignant, involved the head of the cecum and a portion of the ilium. I resected the affected portion of the bowel and did a lateral anastomosis. The pathologist's report was to the effect that the growth was of an inflammatory nature.

ECTOPIC PREGNANCY OF NOT MORE THAN THIRTY-SIX DAYS
REMOVED BEFORE ABORTION ON RUPTURE.

Mrs. T., aged thirty-eight. Mother of four children, had one miscarriage thirteen years ago and one four years ago. Had some pain about right appendage after first miscarriage. Menstruation at regular intervals of four weeks, normal in type. Last menstruation was September 15. She returned home alone from Europe on September 28. I was asked to see her on October 20, three weeks later, as she had not been unwell and feared she might be pregnant. Examination showed a begin-

ning menstruation and a normal uterus and appendages. On the evening of November 2, I was asked to see her again and found that she had spotted about every second day for two weeks, during which time she had felt at times slight "nagging" pains in the region of the right ovary and anterior and inner portion of right thigh. On direct questioning she admitted that she had had that afternoon a little "crampy pain." She thought she was pregnant in spite of the fact that she was flowing. The uterus was slightly enlarged, soft and hardened under the touch during examination. To the right of the uterus the tube could be felt slightly enlarged and very tender. The vessels in the right broad ligament pulsated.

From the history and the findings at the two examinations I had little hesitancy in making a diagnosis of right unruptured tubal pregnancy and advised operation, which was done at ten the next morning. A preliminary curettage showed only a few shreds of thickened mucosa. Under anesthesia no tube mass could be detected. Abdominal incision revealed a peritoneal cavity free from blood. The left tube was normal. The right tube was free from adhesion. It was congested and purplish in color and contained in its middle third a small sausage-shaped mass three-fourths by one and a half inches in size, evidently an unruptured ectopic pregnancy. The tube was removed. Convalescence was without incident.

Microscopic examination by Dr. Jeffries, pathologist to the Polyclinic, showed decidual cells in the material removed by the curette and embryonic tissue in the tube.

DISCUSSION.

DR. VINEBERG.—I would like to ask Dr. Wells if he looks upon the case as one of uninterrupted pregnancy or one that did not rupture outside? The specimen as seen in the jar impressed me as one of those cases in which there has been an effusion of blood into membranes of the ovum but without rupturing the external capsule so that there was neither external nor internal bleeding. In other words, the life of the ovum had been destroyed at a very early period leading to the formation of a bloody mole.

DR. MABBOTT.—I would like to ask whether it would have been possible to discover the ectopic tumor under the anesthetic. As I understand, it was discovered without the anesthetic and was not felt under the anæsthetic. Under certain conditions sensitiveness to pain does direct attention to where trouble exists; and in a very fleshy woman it would be almost impossible to distinguish an acute condition from a large ovary or an old salpingitis if the woman were not conscious. It seems to me very important to examine patients before the anesthetic; whereas I know of some who depend entirely upon examination under the anesthetic, particularly in cases referred to them, without examination first before the anesthetic.

THE PRESIDENT.—Perhaps Dr. Wells can tell why the diagnosis was made.

DR. WELLS.—The diagnosis was made because of the fact that I had been enabled to examine the woman early and found her practically normal, and then two weeks later I found a change. She had been away from her husband; came home; intercourse occurred; and I examined her a little less than three weeks after this intercourse. She had missed her period for three or four days and supposed she was pregnant. When I examined her, she had begun to flow. Two weeks later she called me up and said she had spotted every day, but thought she was pregnant.

On the second examination I found the uterus enlarged and a very marked tenderness about the tube, and on that I made my diagnosis of ectopic pregnancy. When the patient was examined under the anesthetic, the element of sensitiveness was removed, and then, rather to my surprise, I could not feel any enlargement of the tube, but I felt so sure of the condition that I opened the abdomen. There was absolutely no free blood in the peritoneal cavity. The tube showed only a small fusiform swelling of its middle third.

DR. MABBOTT.—I think it is always desirable to do what Dr. Wells did and what I think some practitioners do not do, for I have seen an operator open the abdomen and remove the ovaries without personally examining the patient at all.

PRIMARY CARCINOMA OF APPENDIX IN A GIRL OF TWENTY.

Miss. M. R., aged twenty, a fine, healthy-looking girl, was admitted to my service at the Polyclinic on March 23, complaining only that she had had two mild attacks marked by pain and tenderness over the region of the appendix. One attack occurred about twenty and one about ten months ago. She had been told that it was best to have an "internal operation," and came to the hospital for that purpose. There was moderate tenderness over the appendix but no mass could be felt. Temperature and pulse were normal. An inch and a half incision over the outer third of the rectus revealed the appendix lying free almost under the incision. There were no adhesions. Appendix was removed. Recovery was ideal, and patient went home on the sixth day.

The distal end of the appendix was uniformly enlarged to a diameter of a half-inch. On splitting it a yellow, firm mass the size and shape of a bean was found on and in the mucosa. The microscope shows this yellow mass to be a very typical "adeno-carcinoma." (See Fig. 2, Plate II.)

Dr. A. V. Moschowitz in 1903, reported three cases of primary carcinoma of the appendix and collected eighteen additional cases from the literature. In a personal communication to me a few days ago he tells me that eight cases have occurred at Mt. Sinai Hospital during the last ten years, the last, a girl of

ten, being now convalescent, and that in all about seventy-five cases have been recorded.

Striking facts are the youth of the subjects, the majority being between fifteen and thirty years of age; the sex, nearly all being in women; the position most frequently near the distal end, and the location as would be expected in the mucosa.

DISCUSSION.

DR. SAVIDGE.—I would ask about her condition, weight, etc., at, say, ten to twenty months before when she had her first local symptoms of malignancy.

DR. WELLS.—I never saw the patient until she came into the clinic. The only history we could get was that she had two attacks characterized by pain and tenderness over the region of the appendix enough to keep the girl in bed for two or three days. The girl showed no enlarged glands and no cachexia. She was operated on simply as an interval case of appendicitis. She was a very healthy-looking girl.

DR. SAVIDGE.—I make these inquiries to prove or disprove certain important relations to cancer existing in what I have called "the march of antecedents."

If we know when the weight loss begins, and whether there are preliminary changes in the duct and ductless glands of the body—when they first show change and how long before the local manifestation of malignancy—we have at least these important items of knowledge with regard to cancer, cause and cure.

If, on the other hand, we disprove such changes in any given case, we are only led to the next, rather iconoclastic, question: whether microscopy of malignancy, minus such clinical data, is as reliable as we have hitherto considered it. This latter skepticism seems to be growing.

DR. MOSCHCOWITZ (*by invitation*).—Primary carcinoma of the appendix is a subject I have been very much interested in. When I last wrote an article on that subject there were few cases. In my paper up to that time I had collected possibly eighteen cases of undoubted primary carcinoma of the appendix. There were at that time other cases, but they cannot be very well considered, mostly on account of the fact that they have not been examined microscopically. Since that time I find in my notes that up to date there are approximately eighty-five cases of primary tumors of the appendix. Of these one was myoma, one fibroid myoma, one myosarcoma, two sarcomata, three endotheliomata, the rest carcinomata.

As Doctor Wells said, during the past nine years, we had at the Mt. Sinai Hospital about twenty-seven hundred cases of appendicitis, and among these there were eight cases of primary carcinoma. One thing very peculiar about carcinoma of the appendix is that they occur in the very young. I have now in my care a young girl of ten who was admitted to the hospital

with appendicitis and a diffuse purulent peritonitis. The appendix was gangrenous and perforated. We also found a little tumor about the size of a pea which upon examination proved to be carcinoma. There is this much, however, which is very peculiar in addition, and that is, that of all the carcinomata of the body perhaps the very best one to have is carcinoma of the appendix. So far as I have been able to find out, there is but one case which has died from the carcinoma itself. This might be due to two different facts: either these carcinomata of the appendix are not malignant, because we find they are frequently encapsulated just as much as fibroma; that speaks against the malignancy of the case. The second point is, that among all the cases that have been reported only one case died of metastasis, and that one is by no means a *bona fide* case of primary carcinoma. I believe this particular case was reported as a carcinoma of the appendix, situated beneath the serosa. I cannot see how it can be well taken as a primary carcinoma, as this patient had also a carcinoma of the ovary. Of course it is very hard to decide at the present time, but to me it appears that it was a primary carcinoma of the ovary. Whether the malignancy or benignancy of the tumors is due to the inherited nature of the tumor or whether something else, is still a mooted question. It would not be surprising to me that the benign nature is due to the fact that they give symptoms earlier and come so much earlier to the attention of the surgeon than carcinoma of any other part of the intestinal tract. A young girl of ten—no one knew she had a carcinoma of the appendix—was operated on for ordinary appendicitis. Another point of some importance is that, no doubt, these cases are much more common. We have had eight cases among 2700 of appendicitis. Who knows how many more instances are not found because not examined. There is a case reported, I believe, by Dr. Kelly in Philadelphia of a carcinoma of the appendix of microscopic size only. In the routine examination certain cells were found some of which were pronounced subsequently to be carcinoma of the appendix.

DR. HOWARD C. TAYLOR reported a case of

ECTOPIC PREGNANCY WITH TUBAL ABORTION.

The history of this patient is as follows: Aged twenty-eight years, no children, one miscarriage eight years ago; menstruation occurs every five weeks, continues for five days, is moderate in amount and without pain; there has been no pain in the abdomen or back previous to the present illness.

The last regular menstruation was eight weeks previous to admission to the hospital. Since two weeks previous to admission to the hospital, the patient had been flowing irregularly. Two days before admission the patient had severe pain in the abdomen which was followed by marked prostration and shock.

On admission to the hospital, the patient had a normal tem-

perature, pulse of 120, the abdomen was moderately distended and tender, the uterus was slightly enlarged, there was no mass to be felt in either fornix, the total white blood count was 25,000 leukocytes with 94 per cent. of polynuclear cells.

At the operation, eighteen hours afterwards, the abdomen was found filled with blood from a tubal abortion from the right tube.

The two points to which I wish to call special attention in regard to this case are the value of the blood-count in the diagnosis of ectopic pregnancy when there has been considerable recent bleeding, and the improvement that followed directly after the operation. The greatest value of the blood-count as an aid to the diagnosis of ectopic pregnancy rests in the polynuclear count and especially if there is no temperature. The change in the blood is of course due to the amount of bleeding that has occurred. The inflammatory conditions that occur in the pelvis rarely, even during the periods of acute exacerbation, give a polynuclear count as high as 94 per cent. and would usually be associated with temperature.

The patient was operated on about eighteen hours after admission to the hospital. During this time there probably had been no bleeding as there had been no increase in the rate of the pulse and there was no active bleeding from the tube at the operation. The condition of the patient had, however, not materially improved. In the first twenty-four hours after the operation the condition of the patient showed a decided improvement. This improvement directly following the operation for ectopic pregnancy has been noticed by a number of operators and is a strong argument in favor of early operation. In my judgment, there are two causes for this improvement: one is the removal of the increased intraabdominal pressure and the other is the removal of blood that has collected in the peritoneal cavity. I do not mean by this that I think that it is necessary to remove all the blood from the peritoneal cavity when operating for ectopic pregnancy and refer only to the large amount of blood that flows out or is removed by the handful from the cul-de-sac. I believe that these two factors, the increased intraabdominal pressure and the presence of large quantities of blood in the abdominal cavity, are important factors in the causation of the condition of the patient in ectopic pregnancy.

DISCUSSION.

THE PRESIDENT.—Dr. Taylor has brought up the question of improvement by waiting, or of immediate operation.

DR. VINEBERG.—I do not intend to inflict the members of this Society with what I have just recently written on this subject; I think anybody interested at all probably read it, but I am interested in Dr. Taylor's remarks, and that is one point I

brought out in these cases of profuse interperitoneal hemorrhage. In one case particularly, the woman improved as soon as the abdomen was opened. I explained it in the same way as Dr. Taylor—the relief of the abdominal pressure. A reason frequently given for waiting is that the patient can be better prepared.

It is true, we can wait in the majority of cases, but there is nothing gained by it. So far as my own experience goes, the results are just as good and better, I think, if the patients are not subjected to too severe preparatory treatment, if they are not purged for forty-eight hours, as was thought necessary formerly.

As to what Dr. Taylor says about the blood-count, we have been following it up at Mount Sinia and it has been rather misleading. With a high blood count we have found pus and *vice versa*, but I am not so sure about the high polynuclear count. We thought a high white blood-count and a high polynuclear count indicative of an ectopic pregnancy, but this has been found erroneous also in some cases.

DR. TAYLOR.—I think the polynuclear count is the most important. A total count of 25,000 is common, but a polynuclear count of 94 per cent. is more uncommon with pus, especially if the case is of short duration.

DR. VINEBERG.—I think some of our cases had as high a polynuclear count and still we found a pus collection and not ectopic pregnancy.

DR. BROWN.—Did you find that in all cases?

DR. VINEBERG.—No, but we did in some of them.

DR. WELLS.—Sunday afternoon I operated on an ectopic pregnancy and on another Monday morning, and both illustrate the evils that are liable to accrue to the patients from deferred operation.

In the first case, the symptoms had been noticed a week before, and the case had been carried along by her physician in the hope that it was not ectopic. On Thursday before I operated, the patient began to be quite seriously ill. She had repeated chills and an irregular rise of temperature to 104°. At the operation we found a ruptured left ectopic tube with a large amount of dark, clotted blood in the abdomen. The right tube was full of pus; there was pus in the right ovary, and there were isolated collections of pus in among the blood-clots on the intestines. A condition like this rapidly becomes extremely serious.

In the second case the diagnosis was made by the attending physician four days before, the patient then being in very good condition. But after a serious hemorrhage the day before her abdomen became filled with blood and her condition critical. The same improvement was noticed that Dr. Taylor mentions, as soon as the blood was removed from the abdomen, the patient improved remarkably.

It seems to me both of these cases would have been better

off if the operation had been done just as soon as the diagnosis was made. Convalescence in both cases was uneventful.

DR. VON RANDOHR.—I would like to mention a case of pyosalpinx with an ectopic on the other side—a case seen many years ago. There was no operation performed. The ectopic was absorbed on the one side, the other tube ruptured spontaneously through the vagina. The woman recovered and is well at the present time after fifteen years.

In this case we got improvement by waiting. At that time we did not do quite so many operations, and with less success than at the present time. Every case has its own indications. If the indications show the temperature very low, with high pulse or an exsanguinated condition, it is necessary to operate, but there are many cases that will do just as well without interference as they would if operated on.

DR. CLEMENT CLEVELAND.—Several months ago a case was brought to me giving this history. The woman was thirty-four years of age; a very delicate person; she had been married, but had separated from her husband and had been living apart from him for some time. But she admitted to me that she had had relations with a man some time before. She was not a woman of the street, but a very respectable person. She told me it only occurred once several months before she came to see me.

She had passed over, as she said, only one menstruation. There had been a little discharge of blood for several weeks, but nothing that appeared like menstruation. She complained chiefly of a constant dragging, with some pain in the pelvis.

Her physician had discovered a tumor and had thought it might be malignant or, possibly, an ectopic pregnancy. I could not come to a positive diagnosis. The tumor was to the left of the uterus. The abdomen was not excessively large. The tumor was very tense and did not appear to the touch like an ectopic gestation. It was the size of a two and one-half or three months' gestation, yet I was very much in doubt. I opened the abdomen, making an incision low down and to the peritoneum. I found the latter thickened and attached to this tumor, so I had to extend my incision. There I found the omentum very much surcharged with blood and the intestines attached to the tumor, and it was very difficult to penetrate below. I did succeed in getting my finger down against the tumor back of the intestines and found it very firm. I cut off the attachment of the omentum and took out a piece, because it looked very suspicious, to have it examined.

The case was seen by me, by Dr. Broun and by one or two other gentlemen of the hospital, and nobody was willing to make a positive diagnosis. I think the preponderance of opinion was in favor of malignant disease. There was a suspicion in our minds that it might be ectopic after all, but I did not dare to go on.

She went on very quietly for four or five days, and then she had a chill, followed by a temperature of 104° . This continued for two or three days. On the fifth day she commenced to have blood in her stools and the third day after that appeared, she discharged a macerated fetus of two and one-half months, by the rectum.

This is something entirely new in my experience. I do not know that I have ever read of anything like it. The treatment was expectant—a waiting to see what nature would do. She recovered entirely, the discharge ceased, the mass disappeared. About two weeks after the operation she had another violent rise of temperature to 106° . I had a blood-count made; there was no appearance of septicemia and the polynuclear count was normal. We examined for the plasmodium, which was found. I immediately put her on quinine. She had a chill next day, but quinine at once put a stop to recurrence. She was in the hospital two months.

She has gone south now apparently entirely well. The tumor has entirely disappeared. The uterus is a little fixed, but there is no appearance of the former tumor. I have made up my mind that the pregnancy must have been ovarian or tubo-ovarian. I should have said that there was no blood in the abdominal cavity. I know of no other way to explain it. It shows that nature certainly is a very good physician.

DR. COE.—I had a case in which the macerated fetus was discharged per rectum. As an interesting point (although I am a strong advocate of prompt interference), I would like to call attention to the cases in which we are not allowed to operate or from circumstances in which it does not seem advisable at the time, yet these patients get well.

I have known a hematocele to reach as high as the umbilicus, and when I proposed to operate on the patient, it seemed wiser to defer it on account of her poor condition. Then afterward she refused operation, yet she got well.

Recently I saw a doctor's wife with a clear history of intra-peritoneal rupture. That patient had a large hematocele. Operation was refused, and yet she got well.

We all know how heavy the mortality was in these old cases. Still a considerable proportion recovered without operation, and I have examined such patients years afterwards and found no traces of the original trouble.

DR. BROUN.—I do not believe that the explanation suggested by Dr. Taylor and also by Dr. Vineberg, of the immediate improvement of patients following abdominal section for ruptured extrauterine pregnancy, attended by collapse, is the true one.

As I understand the speakers, they regard the immediate improvement as due to the relief of pressure (intraabdominal) caused by the blood liberated in the peritoneum.

I am more inclined to regard the improvement as due to the

removal from the general cavity of the free blood which, suddenly poured out into the peritoneal cavity, causes by its presence a profound shock in addition to that caused by the loss of the blood from the general circulation.

This is in part exemplified by the thin pulse so commonly found in patients with tubal abortion. Here the amount of blood which has been slowly thrown out is not sufficient to cause a difference in the character of the pulse. The pulse change must be due to the presence of the blood-clot in the peritoneal cavity acting as a foreign body. In these operations also, it is common to note an improvement in the character of the pulse soon after the operation.

In larger amounts of blood being rapidly thrown out as in the conditions in question the shock must necessarily be greater.

A parallel is also found in the profound shock attendant on secondary hemorrhage in abdominal operations. The shock is out of all proportion to the amount of blood lost from the circulation. It appears to me to be due more to its presence in the peritoneal cavity.

Again in large collections of ascitic fluid we do not find any material change in the pulse, nor do we find any marked improvement after its removal.

I had the pleasure of being present during the operation of Dr. Cleveland and heartily concur in the opinion that the condition of the parts after the abdomen was opened was not one to justify a continuance of the operation. The adhesions were so extensive as to cause all present to think that the wiser course was to act as the doctor did do in closing the abdomen. The true condition was not suspected and no one was more surprised than myself when the outcome was told me a few days following.

THE PRESIDENT.—The chair would like to report a little experience of this delay of operation which occurred last spring. I have been in the habit of advising immediate operation in ectopic gestation; *i.e.*, as soon as arrangements could conveniently be made. But last spring there was an important case here in town in which I was called in consultation with Dr. Kinnicutt, Dr. Bull and Dr. Lyle.

She had lost so much blood that we all felt afraid to open that woman's abdomen lest she die on the table. We agreed to watch her pulse and wait until the next day, that she might rally and make the operation safer. The next day she was infinitely better. I did the operation in the afternoon and she passed through it with no trouble and made a very good convalescence.

That was the first case in which I have waited, and yet I think it was a distinct advantage, and I am sure she stood the operation much better than she would have done had we operated when we first saw her.

DR. VINEBERG.—Had she much blood in the abdomen?

THE PRESIDENT.—It was full of blood, which welled up when

we made the incision. I had always followed the plan of immediate operation, and yet we felt in this case that we would watch the pulse and wait. Of course, we were ready to do the operation at any time, if she seemed to be getting worse rather than better, but at the end of two hours the pulse was better, and at the end of four hours better yet, and so we let her go until the next day.

DR. VINEBERG.—I would like to add just one word. There is a marked difference in the amount of blood poured into the general peritoneal cavity and even a moderate effusive flood will often be attended with symptoms resembling collapse due to the shock caused by the impact of the blood upon the general peritoneum. The symptoms of collapse, however, in these cases rapidly disappear. But in the very severe variety of intraperitoneal hemorrhage, those which I have termed "cataclysmic cases," the condition of the patient does not improve with the lapse of time, on the contrary it steadily grows worse, and in the majority of the cases the patients will die from a combination of anemia and pressure upon the heart and lungs.

DR. HOWARD C. TAYLOR.—My reason for waiting in this case was for the convenience of the hospital and myself. The patient was seen first at night and as her condition was satisfactory, I considered it safe to wait till the following day to operate.

In regard to the frequency of deaths from this hemorrhage of ectopic pregnancy, a short time ago I wrote to Dr. Schultz, coroner's physician for many years, and asked him how often he had seen cases of sudden death from ectopic pregnancy. He said he had seen two cases ten years ago, but none since.

DR. H. N. VINEBERG read the paper of the evening, entitled:

PYELITIS OF PREGNANCY.*

DISCUSSION.

DR. MARX.—Pyelitis of pregnancy is not, according to my experience, as rare as we are led to believe. Within the last few years I have personally seen nine cases.

Six cases were distinctly due to the colon bacillus (shown bacteriological) and, as Dr. Vineberg states, all these cases of colon bacillus infection were on the right side. He failed to speak of the possibility of a direct infection from the right kidney and the ascending colon. This has always appeared to me possible because of the constipated habit of pregnant women. There is a possibility for the direct transmission of the colon bacillus from the ascending colon through the pelvis or right ureter to the kidney.

In three other cases and, what is remarkable, all on the left side, one was tuberculous, one gonorrheal infection and one due to a calculus in the kidney. It is remarkable in the six cases of colon bacillus infection, that not a single one had been

* See original article, page 769.

diagnosed as pyelitis. In five of these cases, the diagnosis was appendicitis, and I was called in for operation. In the other cases, two were diagnosed as appendicitis and one as ectopic pregnancy, and in this latter case the patient went to term and was delivered without any trouble. The failure to make the proper diagnosis in this case was due to a very distinct enlargement from dilatation of the ureter. The pain was very marked at McBurney's point, and in all the six cases pain over the region of the appendix was very pronounced, so that in the last two years, I have utilized the Meltzer sign: the right leg acutely flexed over the abdomen, which increases the pain in appendicitis, while in urethritis and pyelitis the pain is remarkably lessened.

I can readily understand how mistakes have been made in not diagnosing pyelitis for the reason that in many acute cases you get a temporary blocking of the ureter; so that the most careful urinary examination may be entirely negative. In one case I employed a urethral catheter with the idea of overcoming the obstruction. That patient passed an enormous amount of pus, and in a very short time she had entirely recovered. I am opposed to pelvic irrigation with the idea of overcoming any pus obstruction in the canal, but the passage for this purpose of a bougie may be thought of.

The odor and color of the urine in colon bacillus cases is very characteristic. I have never been able to cure the pyelitis by the interruption of pregnancy. Most of my cases occurred in early pregnancy where pressure of the head could be excluded. In later months where pressure on the right ureter by the head might occur, place the patient on the side opposed to the supposed diseased organ or in the knee-chest position. I have always felt that where there was sufficient indication to induce labor, or where the effect of the emptying of the uterus would be to check the disease, that surgical interference should be decided on; *i.e.*, draining the pelvis of the kidney or the kidney itself.

DR. COE.—The cases of pyelitis of pregnancy I have seen have been almost invariably preceded and accompanied by marked intestinal symptoms. That suggests whether anything is possible in the way of prophylaxis, and brings up the familiar subject of the toxemia of pregnancy and the importance of looking after the intestinal tract.

I have been impressed sometimes by the disproportion between the amount of pus in the urine, the slight tenderness over the kidney and the high temperature. It is always alarming to the members of the family in private practice. I think myself that it is sometimes very difficult to distinguish this pyelitis from appendicitis. Curiously enough, cases in which I have had marked symptoms of pressure by the fetal head have not been combined with any renal trouble.

DR. CLEVELAND.—I would like to have it brought out if possible in the opinion of the different ones who discuss the

question, their belief or non-belief in the use of urotropin. I would like to have an expression of opinion whether they get any decided effect or not from the use of this drug.

DR. OASTLER.—I wish to briefly relate an unfortunate case bearing on the subject which occurred in my practice some two weeks ago. It will bear out some of the facts mentioned to-night and controvert others.

The patient, forty-one years of age, in her second pregnancy was delivered of twins. The puerperium was normal except for edema consequent upon the pressure resulting from the size of the children. The labor was normal. Three days later the patient suffered from a chill at two in the morning and a sudden rise of temperature to 103° F., the pulse remaining slow, about 94. Examination of the urine the previous evening was negative. The nitrogen ratio was not taken. At eight the following morning examination of the urine revealed an abundance of pus, some blood and casts and a culture taken later from a catheterized specimen revealed the bacillus coli communis and the staphylococcus. There was no pain over the kidneys and no other symptoms referable to a suppurative pyelitis. An acute catarrhal colitis developed at once with blood and mucus in the stools. At the end of twenty-four hours the patient became jaundiced and all the evidences of acute yellow atrophy of the liver developed, death following on the seventh day of the illness. The temperature gradually fell to 99° F. as the pulse increased in frequency. The blood-examination on the fourth day revealed 25,000 leukocytes with 89 per cent. polymorphonuclear cells. The pathologist reported the condition grave and death probable.

Here was a condition of suppurative pyelitis, acute catarrhal colitis and acute yellow atrophy of the liver, all at one time. Is it possible that the toxemia of frequency, so-called, is due to the absorption of toxins produced by bacteria—say, the bacillus coli communis or the staphylococcus pyogenes—and that the resulting necroses—pyelitis, colitis, acute yellow atrophy, etc.—are simply the result of the dose of toxins, the greater the dose the more extensive being the necrosis?

DR. BRETTEAUER.—I was very much interested in this subject and have seen quite a number of cases. A great deal has been said which I can fully indorse. I like especially to indorse Dr. Coe's remark. There is a striking feature in these cases of colon bacillus infection and that is the intestinal symptoms at the onset, either diarrhea or vomiting with paroxysmal abdominal pains, without especial localization and in most cases it is really more of an accident than anything else when your attention is *at once* called to the kidneys. That has been my experience.

Just to mention Dr. Cleveland's remark about urotropin, I would like to say that while I always give it, I do not think it is of any great value, and we have to be even careful in the

amount we give. I have seen quite severe attacks of nephritis follow the employment of urotropin.

One other point I would like to raise is that Dr. Vineberg made in his closing remarks about the treatment of these cases. The treatment is very simple. I would make it still simpler. I do not insist upon a milk diet.

DR. POLAK.—When Dr. Vineberg replies, I would like to have him speak more about the child in these cases. It has been my misfortune to see several of them, twelve in all. Eight of these had spontaneously aborted and five of these eight had a dead fetus. I have been impressed with the idea that pyelitis has a very decided influence on the child and in the last two cases where the symptoms have been pronounced, we would have an indication for the prompt emptying of the uterus. I did not gather from his paper the position he took in regard to the child.

DR. VOORHEES.—I want to bring out a few points in regard to this most interesting and most valuable paper of Dr. Vineberg: The first one is the possibility of the recurrence of a pyelitis during successive pregnancies with no manifestations of the trouble in the interim. I had a case which illustrated this point to a marked degree. In her first pregnancy the patient was seized with chills and fever at about the fourth month. There was moderate pain and tenderness in the right side. The doctor in attendance made a diagnosis of appendicitis and called in a surgeon to operate. The consultant differed in the diagnosis and thought the patient had an abscess in the right kidney. An incision was made in the lumbar region, the kidney was exposed, but nothing was found. The wound was closed. Four or five days later the patient miscarried and she rapidly got well. She conceived again in about two years. About the same time in this second pregnancy, during the fourth month, she started in with the same symptoms—pain in the right side, chilly sensations, with a remittent fever. This ran on for five or six weeks, and a diagnosis of typho-malarial fever was made. She miscarried between the fifth and sixth months of twins. About a week after delivery her fever and other symptoms disappeared. I might say that no examination of the urine was made so far as I could learn in these two pregnancies, but in view of the symptoms in her third pregnancy she must have had a pyelitis both times. About two years later she conceived again and during the fourth month the old symptoms of pain in the right side, chilly sensations and fever returned. I saw her at this time and in examining the urine, I found it cloudy, acid in reaction, containing a trace of albumin, much pus and a marked bacteriuria. She was put to bed for a time, and the usual treatment for pyelitis was begun. I might say large doses of urotropin were given. I think $7\frac{1}{2}$ grs. were given every three hours for weeks at a time. Under this management all subjective symptoms disappeared. She had a little pus in the urine during her

entire pregnancy and from time to time increased bacteriuria, which would subside when the dosage of urotropin was increased. She went to term, delivered herself spontaneously of a very healthy child which is alive to-day, about four years old. The patient since her confinement has been perfectly well.

Another point which I wish to bring out is the possibility of a pyelitis which has occurred in the early months of pregnancy and which has cleared up under treatment, returning postpartum. I had such a case a year ago. The patient had a marked pyelitis between the third and fourth month. I think there was as much as 25 per cent. of pus in an acid urine. The diagnosis was not only clear clinically but examination of the urine by Dr. Sondern showed pus, albumin, cells of the pelvis of the kidney, studded epithelial casts, and colon bacilli. The symptoms all disappeared under diet, large draughts of water and urotropin. At the sixth month the urine was absolutely negative. The treatment was then discontinued. She went to term, delivered herself of a perfectly healthy child, and was perfectly well until the ninth day, postpartum, when she started in with a chill, pain in both sides and a temperature of nearly 104° F. The urine was acid, showed a considerable amount of albumin, much pus, and many studded epithelial casts. She was very sick for five or six days and the urine did not clear up for many weeks.

This case shows that the persistence in the use of urotropin throughout her pregnancy and for a few days afterwards (even though a great many gentlemen present do not believe in the use of this drug) might have prevented this severe pyelitis which returned during the puerperium.

It seems to me that an induction of labor ought to be very rarely indicated for pyelitis, if this condition is recognized early enough and the proper treatment is carried out.

DR. BROOKS H. WELLS.—As the result of an experience in the treatment of quite a large number of those patients, I felt that the induction of labor should seldom be necessary. Most cases improve rapidly under rest, milk diet, avoidance of constipation and the use of a urinary antiseptic.

They should be put to bed and made to lie most of the time on the side opposite to the affected kidney. The milk may be diluted with plain water or with vichy, or some of the lactic acid fermented milks may be used. The bowels must be made to move daily. Hexamethyleneamine (urotropin) should be given in seven- to ten-grain doses with fifteen or twenty grains of sodium benzoate three times daily.

DR. OASTLER.—The value of urotropin in infections of kidney or bladder due to the bacillus coli is undoubted. I beg to instance two cases.

One was a woman suffering from acute dysentery, the examination of the urine revealing an abundance of colon bacilli. Dr. Thomson advised me to give urotropin which I did, and

the dysentery cleared up at once, the bacilli disappearing from the urine at the same time. The dose was $7\frac{1}{2}$ grains four times a day.

The other case was a woman who came to me because she had been refused by a life insurance company. She had no symptoms at all except a bacteremia with alkaline urine and some pus cells, evidences of a mild cystitis. Cultures taken revealed the bacillus coli communis. The urine cleared up entirely on $7\frac{1}{2}$ grains of urotropin four times a day, only to return when the drug was discontinued. The patient in order to keep the urine normal has had to take urotropin regularly for several years. No bad effect has been noticed from continued use.

DR. VON RAMDOHR.—I see very few cases in the early months of pregnancy, and so my experience is not so extensive as that of the other gentlemen. I remember only one case where I made a diagnosis of pyuria. A woman after labor had a very high temperature, and, in addition, chills, and everything indicated septicemia, but she had pus in the urine. She recovered under simple diet.

It is said there is 5 per cent. of pyuria in Copenhagen in all pregnant women. That seems to me an extremely high percentage.

DR. MABBOTT.—In closing the discussion I would be very glad if Dr. Vineberg would express an opinion as to the probability of direct migration of the colon bacillus from the ascending colon to the right ureter, to which reference was made by Dr. Marks.

DR. CRAGIN.—It has been my misfortune to see something over thirty of these cases of pyelitis of pregnancy, and it is a little interesting to compare one's experience with that of others. In these cases of mine there was only one which spontaneously aborted, and in all the cases which went to full term the children have apparently been well-formed. In the thirty cases and over labor has been induced in only three. In one of those I made a mistake, I think, in so doing, because I lost the child from prematurity, and I think the woman could perfectly well have gone to term and saved the child without special damage to her kidney. I think we can adopt the general rule that it is very unusual that interruption of pregnancy is necessary. I should be in favor, however, of inducing the labor rather than operating on the kidney, because in almost all cases they improve very rapidly after the uterus is emptied. We have to recognize the fact that occasionally a very severe infection of the kidney will follow, and in two of my cases the kidney had abscesses develop in it so that the kidney had to be removed. The majority of them, however, have recovered, without operation, have gone to term, have been delivered, and are well to-day.

One of the worst cases I had, the one that lasted the longest, went to term without any special trouble, although the urinary

changes continued for nearly a year afterward. She became pregnant again before I hoped she would; in fact, the urine had only been clear for a few weeks before this occurred, and yet she went through her second pregnancy without any difficulty whatever, and in all of my cases which to my knowledge have become pregnant a second time, there has been no recurrence of the pyelitis. I think we have to recognize the fact, and I tell the people that the urine will show changes for a long time after they are symptomatically well.

In regard to the treatment I have felt that urotropin has been of value. My habit has been to give not over 5 grains every four hours. It seems to me, however, that they are better on the urotropin than without it. We also ought to recognize the value of large amounts of water given so as to flush out the urinary tract. I would lay stress on two things—large amounts of water and the use of urotropin. I believe the posture is a matter of distinct advantage, putting the patient on the other side and taking the pressure off the urinary tract.

In regard to Dr. Oastler's case, it seems to me there were two conditions in that woman, one of pyelitis the other of toxemia; that the pyelitis improved under the urotropin and the water, and her temperature came down as the pyelitis improved; but on the other hand, the toxemia of pregnancy with liver necrosis was there and increased and really caused the death of the woman. Those would be the points I would be inclined to lay stress on.

DR. VINEBERG.—Dr. Cragin has answered some of the questions. In reference to the migration of the colon bacillus I do not think that is possible. It reaches the kidney through the blood-current. It passes out of the intestines, and is absorbed in the blood-current and conveyed to the kidneys. I think there were some experiments made in animals where the colon was sutured to the kidney, but I believe in those cases there was no transmigration of the colon bacillus direct to the kidney. I think, of course, that the cases differ in their severity. One man will be fortunate enough to come across a number of the milder cases and no severe cases. A number of cases do end in spontaneous abortion, but I do not believe that the child is dead then, as a general thing. I do not think abortion occurs on account of the death of the fetus, but on account of the general condition. In cases where the attack passes off and the patient goes to term, the fetus is all right, although Barr speaks of a case in which there were two recurrences in subsequent pregnancies, and in these cases the fetuses were not so fully developed as in other pregnancies in the same woman. Barr reports a very interesting case in which during the pregnancy nephrotomy was done. The patient went to full term and she was delivered. In the subsequent pregnancy she was attacked with the same symptoms. Some one else did a nephrotomy through the old scar. The patient went to full term, had a

healthy child, then she became pregnant, had an attack not operated on that passed off, and she went to full term. She later had attacks in the nonpregnant state.

The point of interest to me is, whether a woman who is allowed to go on with pyelitis for several months, if, we will say the attack occurs in the early part of pregnancy and she is allowed to go on with her pyelitis, although the acute symptoms have subsided, whether that woman's kidney is in good condition afterward. Dr. Berg reported a case recently of acute septic infarct of the kidney in a patient who had pyelitis of pregnancy two years before. It did not seem to me there was any connection between the two, but still it might be well to bear such a contingency in mind. I think, as I said in my paper, that most of us would resort to induction of labor before we would resort to nephrotomy, excepting in those rare cases where there was a distinct pyonephrosis in cases of hydronephrosis which had become infected.

TRANSACTIONS OF THE WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.

Meeting of December 20, 1907.

The President, I. S. STONE, M. D. in the Chair.

DR. MORAN read the paper of the evening

PYLORIC STENOSIS IN INFANCY.*

DR. LOREN JOHNSON opened the discussion of the paper saying that the different types of cases described suggested different stages of the same condition. The late onset of the symptoms in some of the cases was not in harmony with the congenital origin. A physiological hyperplasia occurring in the first few weeks might well be accounted for in the attempt of nature to prevent exit of fluid. An irritant condition of the milk might lead to the tetanic spasm of the pylorus. The diagnosis could be made positively on the persistent vomiting always without bile and the evident peristaltic wave seen on the thin abdominal wall. But he did not consider this wave appearance as necessary for diagnosis. He thought that early diagnosis and dietetic treatment might avoid operation.

DR. BEHREND said that from the histological appearance he would consider the condition as one of hyperplastic growth rather than inflammation. It had been called cellulo-muscular hypertrophy. That it is not an inflammatory process is shown by the connective tissue not being in process of active growth. Moreover, in adults pyloric stenosis due to inflammatory processes shows infiltration of all the layers of the stomach wall.

*See original article, page 879.

The late appearance of the symptoms may be accounted for by an incomplete stricture at birth, allowing the passage of fluid.

DR. ABBE had seen a case of stenosis of the pylorus at St. Lukes Hospital in New York this last fall that had been operated on by Dr. Robert Abbe. The symptoms had begun within a day or two of birth, had developed into those of complete intestinal obstruction high up in the intestine so that the diagnosis had been made before operation as most probably pyloric stenosis. Vomiting had been persistent and constipation complete after the passage of the meconium. Operation had been done on the tenth day. On palpation of the stomach the marked irritability of the organ had been noted, the handling of the stomach causing a contraction which ended in thickening at the pylorus into a mass as big as the terminal phalanx of the thumb. In treatment the incision had been made through the mass into the lumen of the intestine and then mucosa and serosa sutured seriatim. The infant had been in very emaciated condition and lived but a few hours after the operation.

DR. ADAMS had never seen a case in which it was clinically possible to make a diagnosis that would differentiate it sufficiently clearly from persistent vomiting to warrant an operation. The complication of hemophilia in this case he had seen the counterpart of in two cases. In one of these the bleeding had been so general as to suggest a toxic cause. He thought in Dr. Moran's case that the hemophilia and the pyloric stenosis might both have been due to some common cause, as they both appeared in the first four days of the child's life.

DR. WALL said that recently he had had a case that, on account of the persistent vomiting from birth, had simulated pyloric stenosis but that in this case the cause had been overfeeding. That similar conditions occurred in duodenal stenosis. He spoke of recent physiological investigation that showed that there were generated in the stomach digestion certain bodies called harmons which stimulated the pylorus peculiarly, causing it to relax. These same harmons introduced into the duodenum near the pylorus caused the pylorus to contract. These harmons were acid in reaction and their activity could be reduced by alkalis. He thought this fact might be helpful in the treatment of cases of persistent vomiting. That the whole condition might be, in these pyloric stenosis conditions, due to disordered mechanism and amenable to medical treatment.

DR. MORAN, in closing the discussion, said that there were evidently two classes of cases, one of pure hyperplasia and the other a spastic contraction. That the hyperplastic were congenital and gave constant persistent symptoms, that the spastic cases showed no tumor mass and gave intervals in which there were no symptoms. That the bowels may move in the spastic cases. That the spastic type may be superimposed on the hyperplastic or the reverse. In regard to the complicating hemophilia in this case it had not been due to a toxemia, as the hemorrhages

from the bowel had occurred within the first twenty-four hours and had been copious. That later the bleeding might have been warranted by the marasmus.

Meeting of January 3, 1908.

The President, I. S. STONE, M. D., in the Chair.

DR. JOSEPH TABER JOHNSON presented an

OVARIAN TUMOR WITH A TWISTED PEDICLE

with the following history:

Miss S., white, single, aged thirty-six, who was seen on her way South to spend the winter. After a busy day in sight-seeing was suddenly seized with severe pain in her left ovarian region which she considered neuralgic. Many simple things were done for its relief during the night without much benefit and I was called to see her about 4 A. M., and only relieved her by a hypodermic injection of $\frac{1}{4}$ gr. of morphia. The next day she was more comfortable, but the pains returned the next night only to be relieved by another hypodermic. The next day I had her taken to the Georgetown University Hospital where she was more or less comfortable for two weeks. Her temperature never went above 101.4 nor her pulse above 100.

Her abdominal pain lessened in intensity and finally became only tender on pressure. Vaginal examinations gave very little information at first and were difficult and painful to make through her very narrow virgin vagina—but later on a distinct left-sided mass could be made out and still later could be more distinctly felt on the right side.

I rather thought the patient had an endometritis at first contracted from a grip cold following exposure to wet and cold on the last day of her period; that a left-sided salpingitis had occurred and later on the right tube had also become inflamed and that we had a double hydrosalpinx to deal with.

While the entire abdomen was tender and very little distended and while she had very little fever or pain, still she was too sick to sit up. An operation was decided on.

I did not think it was a pus case on account of its history, and if her vagina had not been so very narrow would have considered operating through the vagina. Was surprised when opening the abdomen to find a black peritoneum even before incising it. On account of its adhesion to something underneath I enlarged the incision until I got above the growth which also was black. The adhesions were easily separated from the entire surface of the tumor to everything in contact with it including intestines and omentum.

While I gradually arrived at a correct diagnosis I was not perfectly sure until the pedicle was reached, which was found twisted several times upon itself, thus cutting off nearly if not quite all its vascular supply.

The operation was completed in twenty minutes and the patient has done well.

Ovarian tumors with twisted pedicles are rarely diagnosed until the abdomen is opened. This is my seventh case, and none of these was correctly diagnosed, but they were all operated and all recovered.

DR. LEWIS presented a specimen of

OVARIAN CYST WITH TWISTED PEDICLE COMPLICATING EARLY PREGNANCY.

The case I present is unique in my experience and is typically illustrative of the condition.

In a brief review of the literature, I found a number of instances reported of ovarian tumors with twisted pedicles, but few complicated by pregnancy.

There seems to be an apparent cause in the fact of pregnancy for the twisting of the pedicle. In every case I am convinced that the nausea and vomiting of pregnancy were at least contributory causes.

Dr. M. F. Porter reports in the *Northwestern Lancet* of October 25, 1905, a case of ovarian cyst with twisted pedicle in a woman three months pregnant. "She never had had any serious illness and had made good recoveries from previous labors. She supposed herself pregnant three months as she had not menstruated since July 15. Six days ago she had pain in the right iliac region for about four days, the pain quickly becoming intense. Bowels moved freely twice daily. Attending the attack was nausea and vomiting which continued occasionally for four days, then stopped two days, and resumed again to-day. Temperature two degrees above normal; pulse 58 when first seen, then went up to 120. Is well nourished, abdomen almost full as at term, but more flat. Examination showed a large fluctuating tumor more prominent on the right, with tenderness all over the abdomen. Uterus cannot be outlined, cervix lacerated, pulse 120, temperature 100.4°.

A diagnosis of ovarian cyst with twisted pedicle was made. On operation, the cyst was tapped and ten pints of very bloody fluid withdrawn. Two complete twists were found, the twist being to the left, according to the usual findings of the right-sided cysts."

No mention is made in the report of this case as to whether drainage was used or not. Dr. Porter had three cases within three months and none miscarried. He expresses the opinion that the pregnancy was the cause of the torsion of the pedicle.

Dr. J. K. Kelly, in the *Glasgow Medical Journal* of March, 1905, reports a case of ovarian dermoid with torsion of pedicle, complicating pregnancy three and one-half months.

"The history and physical signs both indicated pretty clearly that we had to deal with an ovarian cyst which had undergone

a torsion of the pedicle, and this was found to be the case at operation. The tumor was a large dermoid of the right ovary. The ovarian ligament and Fallopian tube were almost black and the torsion was continued close to the angle of the uterus. In its removal, however, the uterus was very little disturbed. Firm omental adhesions completely covered the cyst and the edge of the omentum was very firmly grasped in the coils of the twisted pedicle in which the mesentery of the vermiform appendix was involved."

In this case no mention is made of drainage. The patient recovered and no abortion took place.

In the *New York Medical Record* of March 20, 1907, Dr. J. D. Jones reports a case of ovarian cyst with twisted pedicle in a woman four months pregnant. A diagnosis was made after the incision on the abdomen of a gangrenous ovarian cyst with twisted pedicle. In this case he used gauze drainage through the abdominal wall. About the second week after operation, the patient aborted, but finally made a tedious recovery, leaving the hospital forty-two days after the operation.

It will be observed in this case drainage was used and the woman aborted.

In the *Northwestern Lancet* of October 1, 1901, Drs. L. A. Nippert and J. E. Moore reported the following case: Patient between four and five months pregnant, local peritonitis, presenting a large abdominal tumor. At the operation it was discovered that the tumor was a large gangrenous ovarian dermoid with twisted pedicle attached to the diaphragm. The tumor was removed. The patient made a speedy and uneventful recovery and no abortion took place.

The case I present is as follows:

Mrs. H, age thirty-two, married two years. Primipara; usual diseases of childhood; no serious illness up to last sickness. First menstruated at thirteen; for past ten years dysmenorrhea, more at times than at others, otherwise normal. For last year or two when pain was severe at period she noticed a slight swelling in right side. Became pregnant latter part of September, 1907. Suffered considerably from nausea and vomiting. In the present attack she was seized with sudden and severe pain in lower abdomen about 1 P. M. on Monday, December 17, 1907, accompanied with great nausea and vomiting. Dr. Boswell was called in and from the intensity of the symptoms suspected appendicitis or ruptured tubal pregnancy.

The patient was removed to Sibley Hospital that evening, arriving there about 10 P. M. I saw her in consultation with Dr. Boswell at 11 P. M. the same evening.

Notwithstanding she had received several doses of morphine hypodermically, she still complained of great pain in lower abdomen and nausea with frequent emesis. On admission her pulse was 70 and temperature 100, respiration 24.

I learned from her that previous to her pregnancy she had

suffered a good deal of pain at her menstrual period and for a year or more past noticed at times a small lump in her right side.

On examining her abdomen I found the muscles very rigid and the part of greatest tenderness just below the umbilicus and to the right of the median line. Deep pressure in the right iliac fossa failed to show any mass, but one could easily be felt under the point of greatest tenderness, which was slightly movable. Pelvic examination showed nothing save a pregnant uterus.

My impression at this time was that we had to deal with an ovarian tumor which had twisted its pedicle. Her general condition was good and having had no preparation, I advised waiting until the following morning to operate. This was agreed to and directions were given to prepare her for the operating room.

She was placed on the operating table at 10 A. M. December 18. On examination under ether, a freely movable tumor about the size of a small cocoanut could be felt in lower abdomen.

I made a median incision, Dr. Boswell assisting, and found a large quantity of very dark, bloody fluid, free in the abdomen, suggesting a ruptured ectopic pregnancy, but on further examination, found a gangrenous ovarian cyst which was twisted three times on its pedicle, cutting off its blood supply.

The tumor was quickly and easily removed and the abdomen sponged out.

I examined her appendix, found it normal. The condition of the patient being good, I removed it. She left the operating table with a pulse of 90 and temperature 99.

She went along for four days in fairly good shape, her pulse ranging from 80 to 90 and her temperature varying between normal and 100. She suffered a good deal from nausea and tympany during this time, although she passed considerable gas with her bowel movements following repeated enemas. On the fifth day her pulse jumped from 90 to 140, her temperature reaching 101.2. Her abdomen was much distended and very tense. I now believed that intervention was necessary. Accordingly, on December 23, I opened the incision. I found a quantity of very foul-smelling, dark fluid which welled up in the wound as I passed my fingers about the abdomen, breaking up numerous adhesions. She had a general peritonitis. After cleansing the abdominal cavity with sponges, I placed a rubber tube and cigarette drain in the abdomen through the abdominal wound. I then opened Douglas cul-de-sac and drained with a large rubber tube through the vagina. From this time on her condition showed marked improvement to the twenty-ninth of December. Her pulse improved in quality and came down to 100, her temperature ranging from 98.6 to 100. On the morning of the twenty-eighth, just ten days from the first operation, I again felt that she was on her way to a complete recovery.

On that afternoon, however, she was seized with a chill and violent pain in her right chest and had some difficulty in getting

her breath. By 10 P. M., her temperature jumped to 102.2 and her pulse, while full and bounding, rapidly rose from 104 to 132. On examination, it was apparent that she had a bad case of septic pneumonia, the whole right lung being involved. Her condition, in spite of the treatment given, went from bad to worse, until the thirtieth, when at 9.45 P. M. she passed away, on the fourteenth day of her illness. Just previous to her death, her pulse was 140 and temperature 103.2.

This patient showed no evidence of abortion at any time. She died *eniente*.

In reporting this case to you, I call your attention to a rare condition, the first and only one in my experience, a condition which we must always bear in mind when confronted with a woman seized with sudden violent abdominal pain, slight abdominal rigidity, nausea and vomiting, and slight changes in normal pulse and temperature.

In reviewing the management of this case, there are certain conclusions I have arrived at in the light of what transpired during her last sickness.

In the first place I considered the question of drainage at the time when I first opened the abdomen. My experience with the peritoneum in taking care of free blood, in cases of ruptured ectopic pregnancy, led me to believe that it would do so in this case, as I did not consider her infected, and further, she, being very desirous of having her child, I did not wish to leave the abdominal wound weak from drain tubes or to possibly upset the pregnancy from a posterior colpotomy and drainage.

It is true probably that had she been operated on within the first six hours of her sickness, drainage would not have been necessary, and gangrene would hardly have set in by that time.

However, I feel now that we should have drained in the first place and possibly saved the woman even though we jeopardized the life of the child thereby.

1. Remove all abdominal tumors whenever found.
2. Lose no time in operating in severe abdominal pains, especially when attended with nausea and vomiting.
3. When in doubt, drain, per vagina or abdomen or both.

DR. MILLER, in opening the discussion, said that the symptoms of nausea and vomiting frequently were associated with the twisting of the pedicle of an ovarian cyst. The accompanying peritonitis was probably due to an infarct or an embolus, though that was not evident in this case. He quoted Jolly on the reasons for torsion of the pedicle of an ovarian cyst.

DR. KELLEY had had a patient with an ovarian cyst who had gone through pregnancy without any evidence of a twist in the pedicle.

DR. FRY mentioned the case of a woman four months pregnant who had had pain, apparently appendicitis, for which he had operated immediately and found an ovarian cyst with twisted pedicle. The woman did not abort. The rising of the fundus of the uterus

out of the pelvis he thought an important factor in causing a twist of the pedicle of ovarian cysts during pregnancy. In Dr. Johnson's case time might have been gained by putting the woman under an anesthetic for examination.

DR. BALLOCH drew attention to the question of drainage. He said that the mortality was high in cases where intestinal paresis followed peritonitis.

DR. KELLEY did not consider drainage always necessary in the cases of ovarian cyst with twisted pedicle. The question of drainage of the peritoneum was a very difficult one to decide in any case.

DR. MILLER, discussing Dr. Johnson's case, doubted the possibility of the existence of an endometritis and double salpingitis without gonorrhea, pregnancy, or an operation as a primary cause and would like to know if such cases had been unquestionably demonstrated.

DR. ABBE asked about one point in the diagnosis. The patient was said to have been pregnant about four months and yet in spite of the torsion of the pedicle of the ovarian cyst with its shock and the operation, the subsequent peritonitis, and then the septic pneumonia, she showed no evidence of abortion at any time and she is said to have died enciente though no autopsy was held. Any one of the numerous incidents in the course of the case might well have caused an abortion and as the patient passed through them all without the indication of any trouble to the uterine contents, the question arose on how firm a basis was the diagnosis based.

DR. JOHNSON, in closing the discussion, said that a preliminary anesthesia would not have helped much in this case as the diagnosis could not be made with the abdomen open until the mass was three-fourths enucleated. He considered that the rising of the uterus out of the pelvis during pregnancy might well cause torsion of the pedicle. He did not drain any of his cases unless the fluid in the abdominal cavity was putrid. He does not think that hydrosalpinx occurs directly from cold and infection with the normal uterine or vaginal germs. Some cases of adhesions between intestines, tubes, and uterus exist without infection.

Meeting of January 17, 1908.

The President, I S. STONE, M. D., in the Chair.

DR. WALL read an essay on

CONGENITAL SYPHILIS.*

DR. ADAMS in opening the discussion said that the question as to whether the father could infect the infant and not the mother was one of pure speculation and had not, to his knowledge, been proved; that the organism of syphilis had been found in Europe more often than in the United States; that if

* See original article, page 888.

either parent has recently acquired syphilis it is desirable to treat the wife in order to prevent syphilis of the child; that when the child was born an early diagnosis was desirable. In many cases this was easy but in others extremely difficult. He considered that pemphigus at birth was always due to syphilis. In treatment he used gray powder in preference to inunctions.

DR. LEECH said that it seemed possible to transmit syphilis to the second generation and that this had seemed the most probable explanation in several of his own cases. In one case seen with Dr. Miller there were bullæ, desquamation of the hands, bruise-like spots on the face, and snuffles, all of which cleared up under mercurial treatment. He used mercury internally and in inunctions.

DR. VAUGHAN said many conditions were called syphilis which were not. It was generally considered that syphilis was not transmissible after five years. Against the *treponema pallida* as the cause of syphilis is the fact that it has not yet been isolated and cultivated. He did not consider response to mercurial treatment diagnostic of syphilis as the drug is a tonic and will improve almost anyone. The apparent noninfection of either the mother or the child when the other is clearly infected during pregnancy is hard to explain except on the ground that the mother is infected but the symptoms remain latent.

DR. ACKER considered the signs developing in the eye, ears and teeth most efficient in making the diagnosis of syphilis. Some men thought that all cases of interstitial keratitis were due to syphilis. In treatment he usually used gray powder, but some cases needed also inunctions and calomel.

DR. MORGAN thought that mercury helped many diseases and that it could not be used for diagnosis. He thought syphilis a scapegoat for many poor diagnoses. A sure diagnosis could be made in infants on the presence of snuffles or condylomata. He treated many cases of congenital syphilis if the infant was nursing by treating the mother.

REVIEWS

MEDICAL GYNECOLOGY. By HOWARD C. KELLY, A. B., M. D., LL. D., F. R. C. S. (*Hon. Edinb.*), Professor of Gynecological Surgery in the Johns Hopkins University and Gynecologist to the Johns Hopkins Hospital, Baltimore; Fellow of the American Gynecological Society, etc. Pp. 662. 163 illustrations for the most part by MAX BROEDEL and A. HORN. D. Appleton & Co., New York and London, 1908.

This is a work that should be read by every physician, whether he be a general practitioner or a specialist in gynecology. Its pages bear the impress of a wide experience, a keen discrimination and a sound judgment, and emphasize from the broadest

point of view those principles of hygiene and prophylaxis which look beyond the mere local condition to the general development of the individual woman and through her of the race.

In his preface Dr. Kelly recalls how, within hardly more than a generation, from modest beginnings, as a sort of minor specialty, coupled with diseases of children, and often professed by general practitioners with no special training, it has grown to the dignity of a major surgical specialty so extensive that many gynecologists of to-day claim the entire field of abdominal surgery as their proper domain by right of discovery and conquest. He holds that this period of surgical evolution is now clearly at an end and deems it a fitting time to review from the most advanced stand-point the relationship of gynecology to general medicine, and in this review to return to the general practitioner those portions of the field which seem most properly to belong to him.

In the first chapter, the consulting room, the nurse, history taking, lead the way to the consideration of the general principles of the gynecological examination. This is gone into with considerable detail, including the examination of the rectum and with many of the little artistic touches so characteristic of the author.

The chapter on the hygiene of infancy and girlhood begins with the statement that the most important factor in the development of a healthy girl baby into a healthy young woman is an intelligent mother, and ends in the following summary:

"The great function of women is to bear and to rear children. The primary requisite for this is a healthy body. To rear children women need intelligence. Good health and intelligence are not incompatible. Whatever in a final analysis may be shown to interfere with a woman's physical capacity to bear children or her ability to rear them is, for her, unhygienic. The health of the growing girl is a result of her heredity and her environment. Her heredity will be more favorable when public opinion makes good health in men and women a primary element of attractiveness and hence an important factor in sexual selection. Her environment, represented by the family, the school and the community, will be more favorable when the family secures and applies a better knowledge of personal hygiene, especially of food and its relations to health, growth and energy; when the school possesses and applies a better knowledge of the physiology of fatigue, physical and mental; when the community acquires and applies a better knowledge of infectious diseases and the means for their prevention."

Chapters III and IV discuss normal menstruation and the menopause and dysmenorrhea; Chapter V intermenstrual pain; Chapter VI amenorrhea; and Chapter VII menorrhagia and metrorrhagia and extrauterine pregnancy.

Chapter VIII includes constipation, headache, insomnia and obesity. The section on constipation is excellent, the author laying especial stress on the physiology of the act of defecation,

on posture and, although he gives a number of prescriptions, on avoidance of dependence on drugs. The section on headache is also to be commended.

Chapter IX is on backache and Chapter X on acute infectious diseases as a cause of pelvic disease. Chapter XI discusses vulvitis, vaginitis, cervicitis, and endometritis. Concerning the latter the author very happily says: "The term endometritis has served as a sort of waste-basket for the gynecologist to which obscure troubles, not referable to any other well-defined disease, are commonly referred as a matter of convenience. It is safe to say that in ninety-nine out of one hundred cases, when a physician cures the uterus for endometritis, and removes more or less endometrium, no real endometritis, in the sense of a chronic inflammatory affection, is present. True endometritis is a disease as rare as cervicitis and endocervicitis are common."

Chapter XII includes pruritus, vaginismus and masturbation; Chapter XIII displacements of the uterus and their treatment by packs and pessaries.

Chapter XIV, on pelvic inflammatory disease, includes, definition, etiology, varieties, diagnosis and treatment. The medical treatment is necessarily limited and the practitioner is warned not to wait too long if the case does not improve before calling in an expert. In considering the question of conservatism in operating on these cases, the author says: "It is useless to run risks of a continuance of the trouble, from which the patient is suffering, for the sake of preserving the menstrual function, if she is forty years old or more. If the patient is single and middle-aged, without any expectation of marriage, the exercise of conservatism is less important. If the patient has to labor for her own living, it is best not to take too many chances of a return of the disease by leaving any crippled structures. It is dangerous to save tubes containing purulent or milky fluid. If the patient wants above all things to be well, then the physician will be less inclined to take chances with conservatism. As a rule, the results of conservatism are disappointing, and the patient ought always to be forewarned that it may be necessary to repeat the operation or to make it more radical if the first conservative effort proves a failure. When and what to conserve in recent cases, and when and what not to conserve is a matter of fallible judgment; hence the common failures, even in the most experienced hands."

Chapter XV, on sterility, discusses first the national importance of the question and shows how the condition becomes an index to the morals of a nation; it then goes on to a lucid discussion of its etiology and to the possibilities of treatment. Chapters XVI and XVII discuss gonococcus infection and syphilis; Chapter XVIII abortion Chapter XIX injuries and ailments following labor; Chapter XX fibroids; Chapter XXI cancer and its palliative treatment, and Chapter XXII cystitis.

The functional neuroses met with by the gynecologist are taken up in Chapter XXIII. They include hysteria, neurasthenia, hypochondria and psychasthenia and their diagnosis, prognosis and treatment.

Chapter XXIV describes the conditions of association between appendicitis and certain pelvic diseases; Chapter XXV splachnopleptosia and movable kidney, and; Chapter XXV closes the book with a discussion of postoperative conditions.

The book is issued in a style and size uniform with the "Operative Gynecology" by the same author and has the same beautiful illustrations, clear type and thick, smooth paper.

DIE OPERATIVE GEBURTSHILFE DER PRAXIS UND KLINIK. In zwanzig Vorträge. VON DR. HERMANN FEHLING, Ord. Prof. der Geburtshilfe und Gynäkologie, Geh. Med. und Director der Kaiserl. Universitäts-frauenklinik zu Strassburg im Els. Mit 77 Abbildungen. Wiesbaden: Verlag von J. F. Bergman, 1908. Pp. 190; 4 marks.

In these twenty lectures, the author discusses the most important obstetric operations. Under this head he includes management of breech cases, versions, the use of forceps, induction of premature labor, loosening of adherent placenta, etc., as well as the recognized cutting operations. Inasmuch as the manual is intended for practioners, the exposition is more practical than academic. The author shows throughout evidences of ripe experience as a teacher; his indications are set forth with sound judgment, and the descriptions of the various manipulations are exceptionally clear. Particularly to be noted is the author's easy style, thus recommending it to those whose knowledge of German is not extensive. In but few particulars does the author vary in his practices from conventional methods. He says nothing about rotations of occipito-posterior positions with forceps, but he lays large stress upon a method of manual rotation devised by himself. He does not approve of the Bossi dilator, depending more upon bags and the Dührssen "Kaiserschnitt." He recommends the Döderlein and Bumm-Walcher methods of pubiotomy, and has come to the conclusion that after the operation, immediate extraction of head is advisable. He sees very little value in the Tarnier forceps. An especially fine chapter is that on extrauterine pregnancy; his recommendations are precisely those followed in this country. The illustrations are satisfactory. On the whole, this volume can be cordially recommended to practioners.

E. M.

ROTUNDA MIDWIFERY. For Nurses and Midwives. By G. T. WRENCH, M. D., Late Assistant Master of the Rotunda Hospital. With Introduction by The Master of the Rotunda Hospital. Oxford University Press, London. HENRY FROWDE, Oxford University Press. Hodder & Stoughton, Warwick Square, E. C. Pp. 324, 1908.

In this country this book should prove of more value to mid-

wives than nurses. The work is concerned more with the technical features of obstetrics, and less with the knowledge that we expect our well-trained obstetric nurses to possess. Within the limits outlined, however, the author has done his work well; his exposition reveals qualities of a high pedagogic order, and the respective spheres of the midwife and physician are well defined. The only drawback to the book is the poor quality of the illustrations.

E. M.

SHORT PRACTICE OF GYNECOLOGY. By HENRY JELLETT, B. A., M. D., B. Ch., B. A. O. (Dublin University); F. R. C. P. I., Gynecologist and Obstetrical Physician to Dr. Steevens' Hospital, etc. Third Edition, Revised and Enlarged. Pp. 518. With 310 Illustrations. London: J. and A. Churchill, 1908. Philadelphia: P. Blakiston's Son and Co.

Although a third edition of this work needs no introduction, it is worth while to call attention to the extent of the revision to which it has been submitted. This has been done especially in the large portion devoted to operative procedures which is very fully illustrated. The author has adopted a new classification of ovarian neoplasms resembling that of Kelly. The descriptive portions of the work are clear, simple and brief. The writer describes the procedures advocated by various authorities and then expresses his own preference. The general tendency of his treatment is toward conservatism unless radical measures are distinctly called for, as in the case of malignant disease.

THE CORRECTION OF FEATURAL IMPERFECTIONS. By CHARLES C. MILLER, M. D. Published by the author. 70 State St., Chicago. Pp. 134.

This book is eminently a personal one. The author describes an operation for almost every possible imperfection of the face, even including such "deformities" as undue size of the mouth, scowling face, bags and wrinkles about the eyes, hardness of mouth expression, etc. The author also inserts dimples if required. The operations described by the author show no particular ingenuity; on the contrary, we believe that the resulting scars, in some instances, will probably produce a worse disfigurement than the deformity. The book is poorly gotten up; it is printed on a poor quality of paper, the illustrations are sketchy in character and do not face the text; there is no index.

E. M.

BRIEF OF CURRENT LITERATURE.

Is the Placenta a Good Culture Medium for the Development of Microbes?—Paul Gueniot (*L'Obstet.*, Feb., 1908) details his culture experiments in which he used sterilized portions of placenta for the cultivation of the pathogenic bacteria, in order to ascertain its value as a culture medium. The microbes used for the experiment were the staphylococcus, streptococcus, colon bacillus, bacillus pyocyaneus, and gonococcus. It was noticeable that the growth of the streptococcus was slight, while the bacillus coli and the anaerobes grew well. This is in accord with clinical observation, which shows that when there are putrid placental remains, the colon bacillus, staphylococcus, etc., are found much more frequently than the streptococcus. In true puerperal fever it is the streptococcus that is the principal agent, although several other forms of microbes are usually present.

Rupture of Uterus with Prolapse of Intestine.—H. J. Donaldson (*Surg. Gyn. and Obst.*, April, 1908) was called to see a woman who had been delivered with forceps in an occipito-posterior position, with resulting rupture of the uterus and prolapse of a large portion of the small intestine. When seen by him she had been lying upon the exposed intestines for thirteen hours. The intestine, which measured 126 inches in length after removal, was found stripped from its mesentery. After washing it, the writer returned it through the uterus and brought it out through the abdominal incision. After resecting the injured portion, he did a lateral anastomosis. The patient's condition prevented performance of hysterectomy, so the uterine laceration was sutured. The patient lived ten days, gaining rapidly for seven days in spite of the amount of intestine resected, and died of septic metritis.

The Placenta of Eclampsics.—A. Brindeau and L. Nattan-Laeieir (*L'Obstet.* Feb., 1908) have found the same placental lesions in albuminuria of pregnancy, convulsive eclampsia and retroplacental hemorrhage. There is a typical form of lesion to be found in the placenta in eclampsia and albuminuria. This placenta presents nodules of hemorrhage of various ages, nodular infarcts, white subchorial infarcts, edema, diffuse leukocyte infiltrations, etc. In other cases the lesions are less complex. The typical placenta corresponds to the old lesion, slow in formation, while the simpler form corresponds to the rapid attack of convulsions. In the first form we find nodular infarcts, arteritis, endometritis, edema and small hemorrhages. In the second, diffuse hemorrhages, rupture of the fetal vessels

and plasmodial proliferation. The cause is destruction of cellular masses by the poison of intoxication. The placenta is a mixed organ, the mother being represented by the decidua which is often altered in eclampsia. Hypertension, hemorrhage, rupture of vessels and thrombosis may be explained by the effect of the poison in the blood and consecutive phlebitis and arteritis. The fibrinoid degeneration of the decidual cells is caused by the action of the same eclamptic poison.

Breech Presentations.—An analysis of 250 breech deliveries occurring at the Boston Lying-in Hospital in twenty years leads R. L. De Normandie (*Surg. Gyn. and Obst.*, April, 1908) to the conclusions that breech presentation is common in primiparæ. Manual extraction is done in one-half of all breech deliveries. Forceps to the after-coming head is at times a life-saving procedure. Lacerations of the maternal soft parts occasionally are very extensive. Injuries to the child are much more common than in vertex deliveries. Sepsis is no more common in breech than in vertex deliveries. Breech presentations in contracted pelves should have an early Cesarean section. The fetal heart in breech presentations should be listened to at short intervals after the rupture of the membranes. If the cord prolapses, immediate extraction should be done. A long labor, *per se*, is not an indication for operative interference. Early rupture of the membranes, without advance in the labor, is an indication for immediate operative interference, without waiting for alteration in the fetal heart-sounds, as in the writer's series twenty-one cases in which this occurred gave a mortality of twelve.

Puerperal Abscess of the Uterus.—Anderodias and Pery (*Jour. de Med. de Bordeaux*, March 29, 1908) describe a case of double abscess of the puerperal uterus following an apparently normal labor. They sum up their observations by saying that this is a rare complication of the puerperal state. There is no absolutely characteristic symptom to aid in the diagnosis. Abscess occurs in the second week of the puerperium, after acute symptoms of infection have passed away. The temperature curve is septic. When the adnexa are not involved, pelvic exploration gives no sign of the abscess. There may be tenderness on pressure at one horn of the uterus. In general the diagnosis is not made except at the time of operation. When no operation is undertaken death results. Hysterectomy is generally necessary to save the patient's life. When there is only a single abscess an incision into the uterus may be made and drainage used without removing the uterus.

Preventive and Curative Treatment of Puerperal Infections by the Spirits of Turpentine.—Fabre (*L'Obstet.*, Feb., 1908) describes his method of using spirits of turpentine as a preventive of puerperal infection with streptococci and as a curative treatment when it has begun. After delivery he makes use of an injection of essence of turpentine into the uterus as a preventive of infection. Turpentine is an efficient antiseptic especially

against the streptococcus. The injection consists of equal parts of sterilized water and turpentine. It is not painful, has no inconveniences and causes no intoxication. There is only a small amount of burning felt at the vulva and no skin lesions are caused. The temperature of the patient remains normal or is lowered. When infection has occurred and is still local, injections are given two or three times in twenty-four hours as for prevention. When there is general infection the turpentine is used internally or by subcutaneous injection into the cellular tissue. The results have been excellent.

Puerperal Mastitis.—J. W. Markoe (*Bull. Lying In Hosp. City N. Y.* Dec., 1907) reports two cases of puerperal mastitis treated by a simple stab wound and application of one of Bier's large exhaust glasses for half an hour. The suction was repeated daily on the following six days. At the end of this time the wound was entirely closed in one case and in the other only a superficial raw surface remained.

Peritonism Post-Partum Simulating Uterine Rupture.—Duvernay (*Lyons Medical*, March 8, 1908) describes a condition that he denominates peritonism, occurring after a difficult labor and giving the symptoms of internal hemorrhage following rupture of the uterus. The condition occurred in a woman who was confined by a midwife after receiving treatment from a friend which consisted in the rupture of the membranes. This allowed the head to descend prematurely into the pelvis and converted the presentation into one of the forehead, which was likely to become a face presentation. The midwife sent for the author who, being convinced that this was the best procedure, performed a version without anesthesia, since the patient had a heart-murmur. The child was delivered alive. Soon after the second stage of labor was complete the patient went into collapse with intense abdominal pain and distention. After the patient had been given up as in a dying condition she suddenly improved and was found the next day sitting up eating soup. Recovery was rapid and complete. The books explain the symptoms in such cases as due to mesenteric repletion. Abdominal tension being suddenly relieved by delivery, the circulatory equilibrium is disturbed, the blood precipitates itself into the mesenteric vessels, and they become abnormally distended. It leaves the cerebral and peripheral vessels and there occurs a sort of intravascular bleeding similar in result to venesection. This will not account for the abdominal pain nor the abdominal distention that took place. Another explanation is that of traumatic peritonism, apart from peritoneal inflammation. The patient in question had eaten and drunk a great deal the previous day at a festival. An abdominal congestion was thus produced. The painful operation that she underwent with its resulting traumatism caused a secondary mesenteric repletion. Treatment of such a condition would consist of absolute rest and ice to the abdomen.

Puerperal Pyelonephritis.—Cyrille Jeannin (*Gaz. de Gyn.*, March 15 and April 1, 1908) says that it is generally acknowledged that pyelonephritis occurring during pregnancy is the result of infection by way of the blood with some germ, generally the bacillus coli. He discusses especially the differential diagnosis between this affection and puerperal infection of the uterus. The time of appearance of pyelonephritis varies from the third to the fifth day after labor. It may appear for the first time, or there may have been a previous attack during pregnancy which is now lighted up afresh. There may be no fever, but in general there is fever with chills. The affection passes through two stages, the presuppurative stage and the suppurative. In the former the symptoms are general: intermittent fever, rapid pulse, headache, digestive disturbances, constipation, and urine showing no changes. Then follows a remission of symptoms with cloudy urine containing pus and albumin. There are pain in the bladder and over the kidneys, painful micturition, polyuria, and pollakuria. The condition improves and is again interrupted by a new crisis of pyonephrosis. The kidney is increased in size, and generally the right is affected, the result of the pressure of the involuting uterus on the right ureter. Gradually the condition improves and in five or six weeks is cured. The author then gives a table of the points of differential diagnosis between pyelonephritis and puerperal sepsis in typical cases. Generally the course is not of the typical form and diagnosis is not easy. The general condition must be compared with the local condition of the genitals. In puerperal sepsis this is bad and the patient is evidently septic. In pyelonephritis the general condition is fair and the genitals are not affected at all. A diagnosis will prevent many cases of curettage for sepsis, since pyelonephritis is rather common in pregnant and puerperal women. Treatment consists of liquid diet, hot, moist applications over the abdomen, urotropin, and lavage of the bladder, with catheterization of the ureters if necessary.

Pyelonephritis Complicating Pregnancy.—J. W. Markoe (*Bull. Lying-In Hosp. City N. Y.*, Dec., 1907) reports two cases of this complication of pregnancy. The result of bipolar version in one of them has impressed him with the belief that pressure on the ureters by the presenting part of the fetus is the primary etiological factor in the production of the lesion in question, and that a relief from this mechanical obstruction causes an almost immediate subsidence of the symptoms which may be referred to the kidney. Where the presenting head fits snugly into the pelvic inlet, it is easily possible that the constant pressure exerted on both ureters as they pass over the brim will in time produce both urinary and circulatory stasis with its consequent results. In such cases it seems reasonable to assume that if the softer mass of the fetal breech could be substituted for the harder mass of the fetal head at the pelvic inlet, a sufficient degree of relief from local pressure could be secured when other

measures failed to accomplish the desired result. In such cases an external bipolar version is suggested, and by this procedure we obviate the necessity of inducing labor in order to save the mother and avoid bringing into the world a premature child, which, because of its prematurity, is likely to succumb.

Puerperal Sigmoiditis and Perisigmoiditis.—Franz Lehman (*Berl. klin. Woch.*, April 13, 1908) says that as a result of unrelieved constipation in the latter part of pregnancy, sigmoiditis and perisigmoiditis are rather frequent and must be diagnosed from puerperal infection. He describes two cases observed by himself. The trouble lasts not more than six days. It is accompanied by pain and tenderness in the left iliac fossa contiguous to the uterus. It appears in the first few days of the puerperium, and in some cases a thickening of the intestine can be felt. It vanishes when the intestine is emptied and the infiltration absorbed. It is accompanied by passage of flatus, vomiting, and rapid pulse, simulating the symptoms of volvulus. The inflammation of the intestine extends to the formation of a local peritonitis, and there may be catarrh, erosion, and ulceration of the intestine. Fever is generally slight. The best treatment consists of the administration of castor oil until the bowel is emptied, and small doses of opium to control the bowel action. Preventive treatment during pregnancy, by the use of suitable laxatives, is much more to be recommended.

Twenty-Eight Cases of Benefit to Menstrual Difficulties by the X-rays.—Manfred Fraenkel (*Zent. f. Gyn.*, Feb. 1, 1908), gives summaries of the first twenty-eight cases of menstrual irregularities treated by himself by the applications of x-rays. All of them had irregularities of menstruation for a greater or less length of time before treatment began. The author believes that he has eliminated the psychical element of this treatment, and has obtained effects due to the selective action of the rays on the ovaries. The best time to apply the rays seems to be directly after menstruation or in the first two weeks after the period. The treatments are used two or three times after this first application, in the following weeks before the next period. The influence lasts for two or more periods. This treatment is absolutely painless, without danger, and its results are certain. The only bad symptoms after the use of the rays have been slight headache, nausea, or vomiting, and increased kidney action. There was no change in the urine that could be detected by chemical examination. [In view of the ovarian degeneration following exposure to the x-ray, this treatment should be absolutely condemned.—ED.]

Treatment of Inoperable Carcinoma of the Uterus with Acetone.—Georg Gellhorn (*Munch. med. Woch.*, Dec. 17, 1908) describes a form of palliative treatment of inoperable carcinoma of the uterus that has been made use of by himself, by means of applications of acetone. The worst symptom of

carcinoma of the uterus is the exceedingly offensive odor which renders the patient a burden to herself and others. Acetone is a clear liquid, odorless, and has been used in the laboratory for hardening sections. The author conceived that it might be used for hardening the cancer tissue and thus lessen the odor until the hardened tissues should be again thrown off. He applies it to the crater-form cervix by means of a cylindrical speculum which clasps the cervix and allows the liquid to the amount of a couple of teaspoonfuls to be poured into it. The application is made after curetting the cervix. It hardens the tissues with which it comes into immediate contact. The application is repeated three times a week and is quite painless. The vulva should be protected. The discharge is modified at once. A tampon of gauze is placed in the cervix after the application to absorb the excess. The results are absence of odor, hemostasis, and lessening of the discharge. The treatment must be repeated every two months and gives great comfort to the patient. Permanent effect on the growth cannot be expected.

The Ganglionic Nervous System of the Human Uterus.—M. Keiffer (*Bull. de la Sec. d'Obstet. de Paris*, No. 2 and 3, 1908) has made a study of the uterus of an infant two months old. He affirms that in the uterus of a child two months old there are developed in the uterine and vaginal walls true sympathetic ganglia comparable to the other ganglia of the sympathetic chain. They develop on the extremities of the intrauterine and intravaginal nerves to a certain depth into the organs. At birth and at two months of age many of these ganglia show a well-defined structure and many multipolar cells. The author has not been able to demonstrate isolated nerve cell or groups of cells such as he found in the dog.

Treatment of Inflammation of the Glands of Bartholin by Bier's Hyperemia Method.—Th. Plass (*Berl. klin. Woch.*, April 20, 1908) says that, in general, conservative treatment of inflammation of the glands of Bartholin has been unsuccessful. Such inflammation is generally of gonorrheal origin and ends in abscess of the gland, followed by infiltration of the surrounding tissues. The author has had made a modification of the vacuum glass of Bier, with the entering tube prolonged within the glass, so that the rubber tube and ball cannot be infected with the discharge. He has treated successfully with this apparatus twenty-one cases in fourteen patients. The labium majus is held by an assistant and the glass put in place one to one and a half centimeters in front of the posterior commissure, so that the outlet of the inflamed gland lies in the middle of the opening of the glass. Too great suction with the ball is to be deprecated since the tissues are drawn deeply into the opening and resorption and circulation are thus prevented. The apparatus is applied for thirty minutes, in two sittings, each day with the patient in bed. The pain soon passes away, secretion becomes normal, infiltration disappears, and healing results.

Hematoma of Vulva and Vagina.—Max Stolz (*Gyn. Rund.*, April 6, 1908) describes a case of hematoma of the vulva in a young girl as a result of a fall upon a seat. He has collected from medical literature thirty-seven cases. This lesion is generally the result of an accident, especially a fall; occasionally it results from violent coitus, or from straining at stool, or great effort. The bleeding that occurs is from the pudendal plexus. It is found in pregnancy and the puerperium when the connective tissues are loosened by the patient's condition. More rare are hematomata which arise without any violence from weakening of the veins or pressure at stool. Five cases are noted of hematoma without cause, one as a result of a rupture of a hematokolpos, once from *morbus maculosus Werlhofii*. Age is not important in this accident. Pregnancy and the puerperium are important predisposing factors, trauma being generally added. The location varies, including vulva, vagina, and either side. Its size varies from that of a nut to that of a child's head. It begins with a sharp, stretching pain, followed by difficulty in locomotion, swelling of vulva and labia, desire for stool and to pass urine. Later these functions may be impeded by the size of the swelling. The skin is edematous, and the mucous membrane dark in color. The prognosis is good. In small hematomata absorption occurs without incision in from three to five weeks. Very large ones must be opened, drained and treated aseptically. Rest and ice to the vulva with sedatives for pain are in order in the beginning of the treatment.

Operative Treatment of Diffuse Purulent Peritonitis.—Kotzenberg (*Berl. klin. Woch.*, March 30, 1908) states his belief that diffuse purulent peritonitis from whatever cause is never cured by conservative treatment. Surgical drainage to remove the pus and germs is necessary to recovery, for only thus can the mass of infective material be eliminated. The use of poisonous antiseptic solutions is to be condemned on account of the great rapidity with which they are absorbed by the peritoneum. If the abdomen is drained from incision in its anterior wall it is necessary that the pus be sucked up from the depths of the culs-de-sac by some means. Flushing the abdomen with sterile solution of bicarbonate of soda is valuable. For one year the technique described by the author has been made use of in the Hospital at Hamburg-Eppendorf with success. The mortality has been less than in previous years under other treatment. When appendectomy is to be done, after the incision is made the rest of the peritoneal cavity is walled off by compresses so that no pus will escape into it. After resection of the appendix the abdomen is washed out with sterile soda solution. The mesenteries are washed with the hand, and the solution is injected between the intestines. The wound is closed in stages an opening being left below for a glass drain in which are placed strips of gauze to attract the pus to the surface. These can be removed and replaced without removing the tube and without

pain to the patient. The tampon remains until the third or fourth day. Twenty-seven cases have been treated in this way with two deaths; twenty-one were operated on for appendicitis, the others for other lesions. This is a better result than is generally gained. The author gives the details of the cases treated by him.

Drainage in Purulent General Peritonitis by Way of the Perineum.—A Giuliani (*Lyons Med.*, March 29, 1908) advocates drainage by the perineal route in general purulent peritonitis in the female subject. This method of drainage is rational; it drains at the most dependent point, where the pus accumulates, and makes a large opening. It does not open, like the rectal route, a cavity that is septic and from which sepsis may enter the peritoneum. The drainage is easy to maintain, while that by the rectum is somewhat difficult. Drainage by way of the abdominal wound is not rational because the pus is found collected in the posterior cul-de-sac and cannot run out against gravity. The greatest disadvantage is the fact that the operator unaccustomed to this route must work more slowly, while the condition of the patient demands a rapid operation. It is somewhat difficult by this route to reach the cul-de-sac, because of the variance in its depth. Mauclaire drains by a combined abdominal and perineal route. He passes a catheter down into the cul-de-sac from above and then incises on it from the perineum with a bistoury.

Appendiceal Peritonitis.—E. W. Stanton (*Surg. Gyn. and Obst.*, April, 1908) emphasizes the fact that the distribution of an intraperitoneal infection is, for the most part dependent upon purely mechanical factors, and that in the absence of peristaltic movements, such as are produced by giving food or cathartics by mouth, the tendency of a localized peritonitis, even of appendiceal origin, to spread beyond its original boundaries is very slight indeed, while, when a condition of peritoneal rest is once obtained, the vast majority of cases of extensive and severe appendiceal peritonitis show a rapid localization of the inflammatory process, which either subsides entirely or ends in the formation of a localized abscess.

Phlebitis of the Leg after Laparotomy.—E. Mériel (*Gaz. des Hôp.*, April 4 and 11, 1908) says that a complication that is always to be feared toward the fifteenth day after a laparotomy is phlebitis of the lower extremity. When the patient is on the fair way to convalescence in some cases there begins to develop a phlebitis similar to the milk leg of the puerperium. The author describes twelve cases that have come under his observation. The symptoms may announce its approach before it is developed, and the diagnosis depends on the interpretation of these symptoms. The chief is frequency of the pulse, which is not synchronous with the rise of temperature but occurs before it. After laparotomy pulse and temperature correspond. If the temperature remains normal and the pulse

becomes accelerated from the day after the operation without any appreciable cause and continues so we should be on the watch for phlebitis. This is the signal-symptom of phlebitis. This pulse is not small like the pulse of peritonitis. Its frequency increases without fever. This is due to the resistance opposed by thromboses of the pelvic veins. The heart of the patient is often weakened by anemia and hemorrhage and it is unable to increase its force to overcome this resistance. The rise of temperature generally accompanies the appearance of phlebitis. There is a chill followed by a rise of temperature to 38.5° C. or 39° C., then oscillations of about a degree for three or four days, followed by apyrexia. Each new access of phlebitis causes a fresh rise of temperature. Pain begins with the phlebitis preceding the edema. It is explained by the pressure on the crural or saphenous veins at their passage through the rings of the sheaths. Edema is white and soft. Pulmonary embolism is more often seen after operation for fibroma than after laparotomies for other conditions. It comes like a clap of thunder out of a clear sky and death is sudden at no matter what stage of the disease. It may come as a result of changing dressings, bed linen, or getting up. The etiology includes some change in the veins before the operation. Phlebitis never occurs in a perfectly healthy vessel. It requires some injury during the operation or some diseased condition to act as a focus for the action of bacteria in the circulation. Or there must be some change in the composition of the blood that will favor clotting. The pelvic veins are in these patients varicose or dilated in many cases as are those of the legs.

Invalidism in Women due to Chronic Appendicitis.—W. S. Handley (*Clin. Jour.*, March 25, 1908) claims that many cases of pelvic pain, wrongly diagnosed as chronic ovaritis, as ovarian or other forms of dysmenorrhea, as cervicitis, as endometritis, as movable kidney, and as pelvic neuralgia are really due to chronic appendicitis. The physical sign upon which the diagnosis of chronic appendicitis must mainly rest in doubtful cases is an indolent but intermittent swelling of the right ovary up to double its normal size. A close analogy may be found in the "swollen face" of an alveolar abscess. Round any focus of chronic inflammation congestion occurs, and the tissue spaces are distended by an excess of lymph. These changes are passive and do not imply an active inflammation of the swollen part. Owing to the very rich vascular and lymphatic supply of the ovary, and to its peculiar tendency to the formation of small cysts, the edematous changes show themselves first, and often exclusively, in the ovary. Excessive secretion of cervical mucus may be another symptom of this congestion around the inflamed appendix. The swollen right ovary of chronic appendicitis is usually of about twice the normal size and is free from adhesions. It is often situated lower down than is normal, and may be prolapsed in the right lateral or posterior fornix.

The swollen ovary is not, as a rule, particularly tender. The enlargement of the ovary is an intermittent phenomenon, which may be present at one time and absent on a second occasion a week or two later. A large proportion of cases of chronic appendicitis pass under the name of "chronic ovaritis." Chronic ovaritis, unaccompanied by adhesions, is probably a fictitious disease. If the other pelvic organs are healthy, if there is no evidence of ascending infection of the genital tract, and if colitis can be excluded, the detection of a "swollen right ovary" should not lead to the diagnosis of an imaginary "chronic ovaritis," but to the conclusion that chronic appendicitis is present. The detection of a swollen right ovary is of no value as pointing to chronic appendicitis if there is evidence of ascending inflammation of the genital tract of gonorrheal or puerperal origin. Some cases presenting the signs and symptoms of chronic appendicitis can be cured by a course of intestinal antiseptics and laxatives. The disease is one which should be treated by a physician before operation is decided upon. If colitis complicates the case the benefits of appendectomy, though sometimes great, are always uncertain. But in cases where colitis can be excluded, and where the patient presents the characteristic clinical picture, appendectomy should be urged as promising complete restoration to health at the cost of a very small risk.

Treatment of Cystitis in Women.—Ellice McDonald (*Mont Med. Jour.*, March., 1908) makes use chiefly of four preparations: (1) a bland cleansing fluid for irrigation, usually consisting of one dram of sodium bicarbonate to the pint of water, but made of double strength if much mucus is present, and with the addition of one dram of sodium carbonate if there is much pus; (2) a solution of one dram of quinin bisulphate to the pint, as an antiseptic irrigating fluid; (3) hydrogen peroxid, one-third strength, and protargol, 5 per cent., injected alternately through a catheter into the bladder by means of a half-ounce syringe, the mixture, after a few minutes, being washed out by the cleansing solution, injected by the same syringe; (4) a jelly of Irish moss for lubricating. In addition to this, appropriate treatment is directed to ulcers by direct application of silver or curettage, chronic patches of inflammation are stimulated, and lesions in the neighboring organs treated. If the case is one of very acute irritation, the Irish moss jelly is first injected and a diagnosis made, the bicarbonate solution being used as the dilating fluid. The pus and shreds are then washed away by the peroxide and silver combination. The bladder is then washed and dilated by the quinine solution and more exact examination made for small ulcers, patches of inflammation and the condition of the ureteral orifices. If it is necessary to catheterize the ureters, it is usually done under the quinine solution and after the bladder has been cleansed. If the case is one of very acute irritation, the Irish moss jelly is

injected on removal of the quinin solution. The amount of jelly injected should vary from one to four ounces. If, however, the bladder inflammation is more chronic, the patient is told to retain the quinin solution as long as possible in order to get full benefit from its antiseptic and astringent action. In chronic cases with much congestion and irritation the peroxide and silver combination is seldom used. The aim of the treatment in all cases is first to cleanse the infected area, to direct appropriate treatment toward the special lesion and to exercise an antiseptic astringent and stimulating action upon the mucous membranes by means of the quinin solution.

Spirochete Pallida of Syphilis: its Localizations.—Fouquet (*Gaz. des Hôp.*, March 28, 1908) goes over the history of the discovery of the *spirochete pallida* and the tests that have been made of its life history. He states that cultural experiments have always been negative. It is believed that the organism reproduces itself by transverse division and that the very long specimens seen are about to undergo division. It has been hard to classify the organism, but it is probably a trepanosome. It is regularly wavy and has a flagellum at each extremity. Its length varies from 4 to 14 μ . When living it is actively in motion, rotating on its long axis. The author gives minute directions for staining and recognizing the organism in the tissues. The localizations in the tissues are various. It is found in the initial lesion. It is present in hereditary as well as acquired syphilis. It is generally found along the vessels and connective tissues, thus accounting for the blood vessel lesions that are so frequent. In acquired syphilis it is deeply situated in the chancre, and more numerous in the edge than toward the center. It is related to the vessels always. It is carried to the lymphatic glands, and is found in the terminal capillaries of the papillæ and subpapillary vessels in the roseola. In cutaneous syphilides it is found in the deepest layers of the rete Malpighi, and here the pigment has disappeared, thus accounting for the leucodermas observed. It is rare in secondary visceral lesions. In the suprarenal capsules it was found in numbers. It is rare in tertiary lesions. In hereditary syphilis it is found in the fetal side of the placenta in the chorionic villi; in smaller numbers it is present in the maternal side of the placenta. In pemphigus neonatorum it exists in the liquid of the vesicles, and the covering of the bullæ. In the blood it is found circulating. Nasal and respiratory mucus is full of the organism. It has been found in the eyes, the marrow of the bones, and in especially large numbers in the liver. The spleen contains it, the kidneys show it in the vessels, the pancreas, lungs, thyroid, and testicles are invaded. It has been found also in the ovaries, intestines, and myocardium. The vessels and connective tissue of the nervous system are invaded. The action of mercurial treatment is deleterious to the organism, it becoming less long and reproducing less rapidly under its action.

Early Intensive Treatment of Syphilis.—Carle (*Lyons Med.*, April 19, 1908) advocates early treatment of syphilis with injections between the muscles of soluble salts of mercury. He has treated in this way 214 cases with the result that these patients have gone through a considerable period without any serious manifestations of the disease, or any that may be seen, with entire disappearance of tertiary symptoms, and with the possibility of normal paternity during the third year, and even before that. Among these 214 cases he observed only twenty-eight times roseola of slight nature, lasting but a few days; thirty-seven times mucous patches in the mouth, rapidly disappearing; nine times papular syphilides in the second year; ten times general alopecia; five times onychia; seven times albuminuria; twice icterus. The intensive method of treatment has completely transformed the picture of syphilis that is ordinarily to be seen. In only two cases did he fail to meet with success, and these were much benefited by a course of iodid of potash. Healthy infants have been born after marriages with syphilitics within three years of the infection. The secondary period is so transformed that it is impossible to make the diagnosis without the history of the primary lesion to support it. The patient must be regularly examined and advised by his physician and the injections carefully given to attain these results. The only symptoms that are generally to be observed are headache, enlargement of glands, alopecia, and vague pains in the limbs. The author began his treatment after this method in 1902 and is still making use of it. He gives the necessary precautions and technic. The diagnosis must be absolutely certain; the patient must be carefully examined for the presence of any diathesis, since alcoholics, tuberculous subjects, cachectics, and diabetics do not bear the treatment well and interruptions become necessary. Persons of marked nervous temperament should not be so treated. The urine should be carefully and minutely examined and kidney disease excluded. The condition of the mouth and teeth should be examined and treatment employed to prevent stomatitis. The author believes that the bad condition of the mouth has much more to do with the production of stomatitis than the amount of mercury taken. The author makes the injections intramuscular, using the biniodid or benzoate of mercury because of their convenience. He begins the treatment within the first two months of the disease, and gets immediate, certain, and intensive results. He proportions the dose to the effects obtained. The solution used contains one centigram of the salt in each cubic centimeter. Each second day an injection of four centigrams is made until fifteen or twenty injections have been given. Then there is an interval of five or six days without injection, and a repetition of the injections. After a rest of a month he uses gray oil for injection. The treatment is given less often in the second year and in the third year, but two courses of injections are given.

Surgical Phases of Enteroptosis.—John G. Clark (*Surg. Gyn. and Obst.*, April, 1908) says that no case of enteroptosis should be operated upon until medical and mechanical means have been exhausted without relief. Cases of ptosis due to a congenital habitus will not be relieved by operation, except in the rarest instances; they should not be considered, therefore, as amenable to surgical treatment. In order to arrive at an accurate estimate of the degree of ptosis, the x-ray should be employed. In cases following childbirth, where the abdominal wall is very lax, thus destroying the equilibrium between the extra- and intraabdominal force, resection of the relaxed ventral tissue through the method suggested by Webster may give perfect relief, provided the diastasis has not been of such long standing that the abdominal organs are far below their normal levels. In the latter case, in addition to the Webster operation, it may be necessary to suspend the colon by means of the omentum, thus relieving the stomach of the weight of this organ, and at least temporarily supporting the stomach until there may be a natural shortening of its ligaments. In a simple gastropptosis without marked participation of the colon, the Beye operation may be the one of preference. If the cardiac end of the stomach has been greatly dilated, forming a kink at the pylorus and a decided notch in the lesser curvature, a no-loop gastroenterostomy may be necessary, with closure of the pylorus. In exaggerated cases of ptosis of the transverse colon, where a pendulous loop is formed which produces stasis of the fecal current, as well as tending to twist upon itself, with symptoms of partial obstruction, nothing less than excision of the redundant loop with end-to-end anastomosis will cure the case. In cases of redundant sigmoid, with more or less constant pain in the left side, associated with obstinate constipation, a suspension of the sigmoid so as to pull it up out of this bad position in the pelvis, may give entire relief. On account of the constant mobility of the sigmoid a recurrence may be noted. In exaggerated cases of redundant sigmoid attended with symptoms of extreme constipation, verging on to obstruction, a resection of the sigmoid may be advisable. In all cases a carefully fitted abdominal support, or carefully adjusted straight front corset, should be worn after operation in order to give as much artificial support as possible.

Headache of Puberty.—Paul Dalché (*Gaz. des. Hôp.*, March 31, 1908) describes a form of headache observed in girls at the time of puberty which is somewhat difficult to cure and rather constant. It is generally frontal. Sometimes it is constant with little relief, and at others it appears before each menstrual period, lasts through it, and disappears after it is over. In some it is agonizing, in others dull in character and constant. The author refers it to an insufficiency of the ovarian function producing an intoxication of the system, evidenced by hypophosphaturia. Such patients often have the appearance

of a genital chlorosis. The headache is not migraine nor are there tender points as in neuralgia, but it is diffuse. It is comparable with the headache that occurs at the menopause. A similar condition exists in boys at the time of puberty. The indications for treatment are first hygienic. They include a diminution of exercise, stopping long walks and active gymnastics. The mind should also have rest, and we should prescribe plenty of fresh air, and an out-of-doors life, especially in the mountains at a moderate altitude. Small doses of acetanilide are useful to relieve headaches and calm the fears of the family. External applications of menthol, ichthyol, or salicylic acid are useful. Food should include proteids, fats and gelatinous foods so as to increase the phosphates. Ovarian preparations are useful in many cases in causing relief of the symptoms. Hydrotherapy is of the greatest service. The cold douche for the whole body should be used. It may be preceded by a hot-foot bath or a hot douche over the chest. When there is hyperovarism with menorrhagia the stomach and abdominal regions should not be treated, but effleurage of the extremities is valuable.

Intraabdominal and Atmospheric Pressure as Supports of the Uterus and Abdominal Organs.—C. W. Barrett (*Surg. Gyn. and Obst.*, April, 1908) says that the abdominal contents are in an elastic sac and are composed of liquid, gaseous, semi-liquid, semi-solid and solid material of variable quantities. By reason of their being too great for the sac at times and by reason of muscular action, we have an intraabdominal pressure which, with equilibrium would be equal in all directions. By reason of the constant disturbance of equilibrium, and by reason of the sluggishness of the abdominal contents to respond to fluid pressure, this pressure varies in different localities at a given time. It does not tend to drive organs downward by acting upon their upper surface, but merely finds the places of least resistance in the walls, and endeavors to force contents through these areas. The abdominal contents all have gravity and are sustained by the walls of the sac, the same as the contents of any other sac, except that each of the viscera is suspended by its ligaments. Each organ is primarily suspended by its attachments, but by reason of the semi-fluid nature of the contents, each organ is partially floated by the others and the weight transmitted partially to the abdominal floor. Any organ floating in fluid presses downward as much less upon its supports as the weight of the fluid displaced by the organ. The writer claims that the abdominal contents act like a fluid and do not press the uterus down but buoy it up. Intraabdominal pressure, which is equal in all directions, and fluid pressure, which buoys the uterus up, indirectly cause the prolapse of the uterus by not finding the proper resistance at the pelvic floor. The gravity of the body of the uterus itself tends to hold it forward when it is anterior, and backward when it is posterior to a

vertical line, while solid abdominal contents may press upon it from above with the same results. Intraabdominal pressure does not have this effect, but tends, when excessive, by its action on the pelvic floor, to cause displacement, whether the uterus is forward or not. Atmospheric pressure has no part in the support of abdominal organs, more than it has in the support of grain in an air-tight sac. It acts merely in an effort to make the sac fit the contour of the abdominal contents, which they, by their gravity, and resistance of some portion of the sac, take. The pelvic floor is only indirectly a support to the uterus as it is to other abdominal organs. The uterus is primarily supported by its ligaments, but may be partially carried by fluid pressure or may be pushed downward by solid structures. With a weak pelvic floor the bladder, rectum, uterus, and ligaments may be called upon to do this work of the pelvic floor. They are apt to rebel sooner or later, and prolapse, especially with excessive intraabdominal pressure. Injuries to the pelvic floor are often responsible for displacements of the uterus. When displacements have occurred, orthopedic work upon the ligaments is usually as necessary as repair of the pelvic floor for permanent relief; neither alone is sufficient. The uterine ligaments, being the normal support of the uterus, should receive attention when surgical work is necessary, rather than the creation of false ligaments. In increased intra-abdominal pressure, much may be accomplished by remembering that the contents of the abdomen are too great. Diet, exercise, massage, positions, will accomplish much.

Arteriosclerosis of the Uterus.—R. B. Slocum (*Surg. Gyn. and Obst.*, April, 1908) reports a case of severe uterine hemorrhage and ovarian apoplexy in a woman twelve years past the menopause. A complete abdominal hysterectomy was performed. Marked sclerosis of the uterine and ovarian arteries and of the arterial branches within the uterus was found. The writer calls attention to the fact that arteriosclerosis of the uterus may cause hemorrhage at the same period of life as cancer would. The diagnosis from very early cancer is difficult. As to treatment, ergot, curettage and packing, local applications are of no avail. In most of the cases reported a complete hysterectomy was done rather than a supravaginal because of the questionable diagnosis.

Internal Secretion of the Ovary.—M. Hughes Alamartine (*Gaz. des Hôp.*, March 14 and 21, 1908) gives a study of the question of the internal secretion of the ovary under four heads: effects of ovarian castration; properties of ovarian juice, oophorectomy and grafting; glandular interstitial tissue of the ovary; and corpora albicantia. He says that the consensus of opinion is now that the ovary secretes an internal fluid which is of value in the system. Its influence is not exclusively sexual. The correlation which exists between this and the other glands of internal secretion, the resemblance of the cells of the inter-

stitial glandular substance to those of the suprarenals and their common origin, the relative independence of the interstitial cells and the ovules, the fact that the corpora albicantia do not develop until after the beginning of ovulation, and finally the presence of toxic substances in the ovaries, all establish the theory that the ovary has an eliminative function consisting in fixing, transforming or destroying certain deleterious substances thrown out into the circulation by the body tissues, and brought to the ovaries by the arterial system. These two functions, antitoxic and sexual, need not be dissociated. The toxins elaborated by the ovaries are transformed into useful products. Some are rejected with the ovule and utilized for sexual reproduction, others are absorbed by the organism as secretions to act upon the uterus and prepare its mucous membrane for fecundation and assure the development of the ovum; still others go through the entire organism to produce the phenomena and characteristics called secondary ovarian characteristics.

Frequency of Malignant Ovarian Tumors.—Alberto Ravano (*Gyn. Rund.*, April 7, 1908) gives a summary of all the ovarian tumors treated at the Dresden Clinic by Leopold for the last twenty years. There were 699 cases in all: 645 laparotomies, six operated on by the vaginal route. Of the others, thirty-seven were exploratory laparotomies, and ten died before operation. These tumors may be divided into two groups, malignant and benign. Glandular cystomata 338, dermoid cysts sixty-six, parovarian cysts fifty-five, fibromata ten. Of the malignant there were 230 in all: degenerated cystomata 102, carcinomata ninety-five, sarcomata thirty, syncytioma one, tuberculosis two. Of 469 benign tumors, forty-eight were on both sides; while of 230 malignant ones; 124 were on both sides, showing that a growth in both ovaries is more likely to be malignant. The age differed materially in benign and malignant growths. The benign were most frequent between the ages of twenty and forty years; the malignant from forty to sixty years of age. Under fifteen years of age a tumor is generally malignant and is a sarcoma or degenerated sarcomatous cyst. There were forty-seven deaths among these operated on. The author believes that it is shown that every ovarian tumor should be removed as soon as the diagnosis is made. In pregnancy the removal of an ovarian tumor is demanded, as well as in the puerperium. In cases of malignant ovarian tumors the opposite ovary should be removed.

DEPARTMENT OF PEDIATRICS.

ORIGINAL COMMUNICATIONS.

PYLORIC STENOSIS IN INFANCY.*

REPORT OF A CASE COMPLICATED WITH HEMOPHILIA.

BY

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THERE are certain congenital anomalies of the pyloric region, such as an enlarged gland, peritoneal band, and imperforation, which give rise to varying degrees of stenosis, and even atresia, with a more or less definite clinical picture. In addition to these, there is another abnormality, characterized by a hyperplasia of the sphincter muscle, with or without spasm; and giving a well-defined symptom complex; developing according to some authorities in utero, and according to others after birth. Until less than two decades ago, these various anomalies were so seldom recognized, and more rarely differentiated, that they were regarded as pathological curiosities. But, through the development of gastric surgery, the increasing knowledge of diseases of the stomach, and the evidence derived from many autopsies, it has been conclusively proven that while the strictly congenital malformations of the pylorus are rare, the hypertrophic variety is not of uncommon occurrence.

Beardsley in 1788 was the first to direct the attention of the profession to obstruction of the pylorus in infancy. The case was that of a child who died at the age of five years, much emaciated, and had suffered from persistent vomiting from birth. At the autopsy, the pylorus was found to be enlarged, very firm, and its lumen so narrowed, that it admitted with the greatest difficulty the passage of a very small probe. Until the publication of Hirschsprung's communication a century later, reporting two cases and giving impetus to the modern study of the subject, but two other cases had been recorded; Williamson's case in 1841 and that of Kawoski in 1842. The infants lived five and ten weeks respectively.

In each case death was attributed to hypertrophy of the

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submucous connective tissue; but the clinical histories and descriptions of the specimens make it quite clear that hyperplasia of the muscular coat of the pylorus, was the cause of the stenosis. Hirschsprung was the first to describe hypertrophic stenosis of the pylorus referable to infancy, and that it was due to congenital hypertrophy of the muscular coat; although Landerer in 1879 and Maier in 1885 had noted its persistency as one of the causes of obstruction in adult life. Since that time, there has been a steadily growing literature of the subject, and upwards of 200 cases have been reported.

Pathology.—The autopsies, showing stenosis of the pylorus in infancy, are quite constant. The pyloric tumor is fusiform, movable, of uniform consistency, three-fourths of an inch in length, and about the size of the last phalanx of the little finger. On the stomach side, it terminates in a funnel shaped cavity, and its rounded distal end projects into the duodenum, like the cervix uteri into the vagina. When the pylorus is incised, its wall is found to be firm and about one-sixth of an inch in thickness. The caliber of the lumen varies much, depending on the degree of constriction. Sometimes it is greatly narrowed; and, if before opening the stomach, an attempt is made to force its contents into the duodenum, it can only be effected with great difficulty. The stricture of the orifice is relative. It may permit the passage of a stylet, small sound, or a pencil, or it may be normal.

The mucous membrane presents five or more longitudinal folds. Rarely there is but one very large fold which resembles the verumontanum of the urethral canal. Microscopical section of the pylorus shows that the enlargement is due particularly to hyperplasia of the circular fibers of the muscular layer.

Finkelstein and Greef each report a case where the hypertrophy consisted of an increase of the longitudinal fibers. The connective tissue separating the muscular fibers is greater than normal. The thickness of the submucous coat varies considerably, sometimes it is normal, and, at other times, it may be double the average. The serous membrane usually remains unaltered. The stomach wall, particularly in the pyloric region, is thickened, owing to hyperplasia of the muscular coat. Dilatation of the stomach is not common, except in protracted cases, when it may become enlarged and its inferior border may extend to the umbilicus, or even lower; the organ containing a

large quantity of curdled milk and mucus. The mucous membrane of the stomach is often altered. Cautley noted secondary catarrhal gastritis. Finkelstein observed glandular infiltration and small hemorrhages in the connective tissue. The esophagus is sometimes dilated. The liver, spleen, kidneys, and other organs, are usually healthy. Gran, Pfaundler, and Still have contributed valuable data on the dimensions of the pylorus, in normal and in abnormal cases. Gran compared each class at the age of four months, and found that the wall of the normal pylorus measured one-tenth of an inch and that of the abnormal one-sixth of an inch in thickness. Still likewise made a comparative study of eight normal pylori at the first, fourth, fifth, sixth, tenth, and twelfth month; and three abnormal, one at 12½ and two at 14 months; and observed a wide variation in infants of the same age, and that there was also a striking difference between the two types. Pfaundler measured the lumen of the pylorus; at birth it was 6.3 mm. (1-4 in.), at end of first month 6.9 mm. (7-25 in.), and at one year 9.8 mm. (2-5 in.). Like the measurements of the wall, those of the lumen vary within wide limits.

Etiology.—The etiology is obscure. The condition develops, as a rule, unexpectedly in infants born at term, who do not present anything abnormal, either in weight, constitution, or delivery. Occasionally it is associated with other congenital malformations. Ashby reports a case of imperforate rectum; and Brandt cites another of stenosis of the ileocecal orifice, coexisting with pyloric obstruction. There is nothing characteristic in the heredity. Pregnancy is usually completed without incident; nevertheless, Ibrahim mentions cases in which the mothers had suffered with gastric disturbances during gestation.

More interesting is the study of the collateral antecedents. Since Henschel noted that three infants of the same family presented the same symptom complex; Freund, Köppen, and Ibrahim, have published analogous cases.

Sex appears to have little influence. In a collection of thirty cases, eighteen boys and twelve girls were affected. Breast fed and artificially fed equally show in the malady; but it is not uncommon to find that errors of feeding have been committed. The theories offered to explain the etiology, though quite numerous, can be divided into three groups: First. That it is a congenital malformation; a primary hyperplasia of the pylorus, without the intervention of muscular spasms. Second. That the

muscular hypertrophy is secondary to the spasm, and may have been developed in utero, or after birth. Third. That the stenosis is due to simple spasm; the apparent hypertrophy, one of the manifestations seen at autopsies, being due to a tetanic contraction of the pylorus. Cautley says: "Nature in its endeavor to provide an efficient sphincter, exceeded its mark."

Finkelstein contends that the hypertrophy, though congenital, is secondary; for some unknown reason there is stagnation of the stomach's contents, leaving, as a result, a compensatory hypertrophy of the pylorus and walls of the stomach. Thomson believes that the spasm begins in utero, following some irritant, perhaps the swallowing of amniotic fluid, which acts reflexly upon the nervous mechanism of the stomach, and produces muscular hypertrophy of the pylorus. According to Dawosky, the malady has a postnatal origin, and, as in the adult, is due to some gastric irritant. Pfaundler, partisan of the simple spastic theory, as a result of investigation of a large number of stomachs of infants dying of different affections, was led to consider several varieties. He designated two of them as *systolic* and *hemisystolic*, respectively. In the first, the walls are thick, resisting, firm, and likened to a lengthened uniform tube of limited capacity; in the second, the apparent hypertrophy is confined particularly to the pyloric region. He says, the contraction of the stomach yields to injection of water under pressure, the muscular spasm relaxes, and the stomach again becomes normal.

Pfaundler found a striking analogy between the *hemisystolic* stomachs and those seen at autopsies of infants who had succumbed to the so-called congenital hypertrophic stenosis. The adherents of the spastic theory attribute it to a hyperesthesia of the gastric mucous membrane, consequent upon a special susceptibility of the sensory motor apparatus of the infant. They contend that convulsions, stridulous laryngitis, and spasm of the glottis, so common at this period of life, demonstrate the instability of the nervous system in infancy, and support this theory. Careful study of the available case histories and autopsy records, would seem to show ample proof that the stenosis may be hyperplastic, spastic, or both.

Clinical Course.—The clinical course of the malady will vary, depending upon the degree of stenosis, and whether it is due to hyperplasia or simple spasm of the sphincter muscle. In the former, with or without spasm, the symptom complex will be

more uniformly constant; while in the latter, the signs are likely to change from time to time, during the periods of relaxation of the sphincter.

In either event, however, vomiting is the first sign that manifests itself. It usually occurs unexpectedly, but may be preceded by digestive disturbance. The emesis is very characteristic; being always projectile, rebellious, and forcible; the contents of the stomach being frequently expelled, both through the mouth and nares. It may begin immediately after birth, more usually about the third day, coincidentally with the establishment of the milk flow; or it may not take place until the second or third week, or even later. Scudder and Quinby, in their statistics, noted its beginning on the seventeenth day in 53 cases. As a rule, at first the vomiting is infrequent; but as the case progresses, the intervals become shortened. The food may be rejected immediately after the feeding, or it may be retained, extending over several feedings, when the vomiting suddenly recurs, being very profuse, showing that there has been stagnation. Frequently it is preceded by nausea and pain. After the attack, the infant is greatly exhausted and falls asleep. In the beginning, only the milk is vomited; but later it is mixed with mucus and rarely also with flecks of blood; but no free hemorrhage has been reported. Bile is usually absent, but Saunders and Schwyzer have noted its presence. Hydrochloric acid is variable, and lactic and fatty acids are often found. The tongue is generally clean and the breath not offensive.

When the vomiting is incessant, the infant is quickly reduced to a state of marasmus.

Constipation is another constant sign, depending upon the severity of the vomiting and the degree of stenosis. It is usually obstinate, and several days or weeks may elapse before an evacuation. The stools are scanty and composed of bile tinged mucus, with little or no fecal matter. The constipation, in spastic cases, may be replaced at intervals by normal stools, and even a diarrhea may supervene. Inspection shows marked contrast between the flat or sunken inferior portion of the abdomen, due to the collapsed intestines, and the prominent epigastric region. With the progressive emaciation, the inconstant but more positive signs, gastric peristalsis and gastric tumor, can often be detected. Peristalsis usually occurs spontaneously, or only after stroking or kneading the epigastrium. It manifests itself, by several wave-like projections passing slowly across the

epigastrium from the left costal margin slightly downwards and towards the right hypochondrium. These movements may be simulated by irregular contraction of the abdominal muscles and peristalsis of the transverse colon. Careful examination should avoid error: as the former do not travel transversely, and in the latter the direction of the wave is from right to left. According to Scudder and Quinby, gastric peristalsis was observed in 25 per cent. of the cases reported. Close investigation would undoubtedly reveal its more frequent presence. According to Ibrahim, contraction of the whole organ, a sort of tetany, is quite frequent and lasts about 15 to 20 seconds; the contour of the stomach being so plainly outlined on the abdominal wall, that the greater curvature can be palpated, like the edge of the liver. On deep palpation, about one-third of the distance between the umbilicus and the right costal margin, a hard lump about the size of the last phalanx of the little finger, may be felt. It was first detected by Finklestein. Still found it in 19 out of 20 cases. Like the peristalsis, it is frequently overlooked, because of incomplete examination. The urine is scanty, and sometimes contains albumen and casts (Gran). The temperature is usually normal. Strabismus, Cheyne-Stokes respiration, and other nervous phenomena, have occasionally been observed.

Diagnosis.—In the presence of the symptom complex of pyloric stenosis, the diagnosis is comparatively easy. The persistent vomiting, despite all tentative measures, obstinate constipation, flat abdomen, prominent epigastrium, visible gastric peristalsis, and palpable pyloric tumor, furnish an array of signs that is well nigh pathognomonic. When, however, the gastric peristalsis is not present, and a pyloric tumor cannot be felt, the diagnosis is often very difficult. Still contends, that in the absence of these two signs, the diagnosis of pyloric stenosis, no matter how suggestive, is not permissible. In congenital atresia of the pylorus or duodenum, the signs are more precocious, grave from the beginning, and are rapidly fatal; death occurring usually within the first week. Complete obstruction of the lower intestines is characterized by incessant vomiting, constipation, retention of the meconium, distention of abdomen, and the presence of bile in the vomitus.

Intussusception or obstruction by neoplasms may occur in the course of different maladies; careful examination should detect them. In acute peritonitis, there is distention of the abdomen,

frequently marked diarrhea, and elevation of temperature. Vomiting, strabismus, and Cheyne-Stokes respiration, may suggest meningitis; but the absence of rigidity of the neck, the normal or even subnormal temperature, together with the symptomatology of this disease, will lead to a solution of the question. Simple regurgitation from overfilled stomach, may for a time arouse suspicion, but here the food comes up without effort, unattended by any general disturbance, the infant does not lose weight, and nutrition is not impaired. Our greatest difficulty will be in differentiating gastro-intestinal indigestion, so common in infancy from overfeeding or improper food; but careful attention to the classic signs of pyloric stenosis, regulation of diet, and suitable medication, should enable the clinician to clear the situation.

Prognosis.—The prognosis will depend on the viewpoint taken of the etiology. Those who claim that hyperplasia of the sphincter muscle is the essential factor, give a very high mortality without surgical intervention. Monnier thinks it is 80 per cent., and Scudder believes it to be even higher. The latter also says that apparent cures may occur in partial stenosis, with compensatory hypertrophy and dilatation of the stomach; but they are liable to recurrences, and frequently demand operation in later life. The adherents of the simple spasmodic contractions of the sphincter, Pfaundler, Marfan, Hübner, and others, contend that it is amenable to medical and dietetic measures, that they have seen the pyloric tumor disappear under treatment, and that, therefore, operation is not justifiable.

Treatment.—The treatment of pyloric stenosis of infancy, like the prognosis, and for similar reasons, will be largely influenced by the viewpoint of its etiology. The adherents of the hypertrophic stenosis contend that by operation alone can positive relief be obtained, and that medical measures are at most only palliative. On the other hand, the defenders of simple pyloric spasm claim that surgical treatment is irrational, and that diet, antispasmodics, alkalies, lavage and electricity fulfill all the necessary requirements. These views are too radical, and need to be tempered by a more conservative course. Recognizing that hypertrophic and spastic stenosis may occur as distinct entities, the writer believes in the efficacy of both medical and surgical treatment. Where hypertrophic stenosis is reasonably certain, as shown by the futility of tentative measures and the presence of a persistent pyloric tumor, surgical intervention is

indicated, and should be undertaken without delay. When the symptom complex is not severe, medical treatment should be thoroughly tried before resorting to operation. The first important step is to regulate the diet, as the phenomena of dyspepsia not infrequently play a rôle in the developement of the affection. If the infant is breast fed, the interval of feeding should be lengthened. Sometimes it is advisable to give iced milk with a spoon. If the mother's milk disagrees, a wet nurse should be secured, if possible. One must exhaust every tentative measure, before abandoning breast feeding; and if these fail modified cow's milk should be substituted. Feeding by catheter, passed through the nose to avoid the vomiting which may be produced by suction, is recommended. Whey, buttermilk, barley water, and bouillon have also been successfully employed. In the benign cases, bicarbonate of soda and bromide of soda are efficacious.

Hütnel recommends belladonna; opiates are favorably spoken of, but should be given with the greatest circumspection. Electrization of the pneumogastric nerve, by applying the positive pole to the carotid region and the negative over the epigastrium, hot compresses and cataplasms, have been attended with more or less success. Lavage is highly endorsed by the supporters of pyloric spasm. The washing out of the stomach should be done at long intervals, two or three times a week; if repeated oftener, it might cause irritation of the gastric mucous membrane. Moreover, it should be undertaken long after feeding, and food should not be given for some time after the lavage, in order to minimize the danger of vomiting. Pfaundler and others claim that lavage exerts a salutary effect, by relaxing the pyloric sphincter. Hypodermoclysis of normal salt solution, is of signal value in stimulating the kidneys and skin, and also in retarding inanition. Constipation is to be controlled with calomel, enemas of olive oil, salt solution, etc.

Gastro-enterostomy, pyloroplasty, divulsion of the sphincter, and pylorectomy are the operations that have been performed in a number of cases, where medical treatment failed. Meltzer did the first gastro-enterostomy in 1898; Nicoll, the first divulsion in the following year; while the first pyloroplasty was done by Braun in 1900 (Lange's case); and Stiles, in the same year, performed the only pylorectomy of record which the writer has found. In 1905, Scudder and Quinby collected 60 cases of operation, performed on 59 infants by 28 operators. Of these

operations: 40 were gastro-enterostomies, of which 21 recovered and 19 died; a mortality of 47.5 per cent. Of the gastro-enterostomies, a little more than one-half were posterior operations. There were 11 divulsions or ta operations, with 7 recoveries and 4 deaths; a mortality of 36.3 per cent. There were 8 pyloroplasties, with 4 deaths; a mortality of 50 per cent. There was one pylorectomy with a death; making a grand total of 60 cases, with 32 recoveries and 28 deaths, a general mortality of 46.6 per cent.

While it is perhaps beyond the sphere of the clinician to discuss the merits of the various surgical procedures, yet from an examination of the cases thus far reported, it would appear that posterior gastro-enterostomy is the operation of election. Pyloroplasty, however, has its warm advocates. The Loreta operation, or divulsion, has also met with much favor; but is open to the objection of the danger of recurrence of the stenosis and other harmful sequelæ. Pylorectomy is a severe operation, and has rightly been abandoned. The surgical mortality is high, but with the increasing experience, improved technic, and early intervention, future results will certainly be more satisfactory.

Report of a Case.—I desire to report the following case which, though unfortunate, is of twofold interest; in as much as the pyloric stenosis was complicated with hemophilia which excluded the possible chance of saving life by an operation.

Mrs. F., secundipara. First infant, female, born August 19, 1906, birth natural; child living, and is vigorous and healthy. Second, male, born August 23, 1907, labor normal, L. O. A.; infant well nourished and weighed nine pounds; cord tied after pulsation had ceased. It was breast fed, but vomited after each feeding from birth until death which occurred on the twenty-second day. In the beginning, the infant would fall asleep after nursing; but on awakening, practically the entire feeding would be rejected. On the fifth day, the vomitus contained a coffee-colored material, and the dejections were dark and tenacious in character. As the case progressed, the intervals between nursing and vomiting became less and less, and the rejection of the stomach's contents often followed immediately after feeding. The ingestion of whey, albumen water, etc., were followed by the same result; and in the majority of cases, were mixed with blood. There was but one normal stool during life, occurring about the fourth day, after the evacuation of the meconium. The dark bloody dejections increased in number and amount; and towards

the end, bright blood was noted. Bleeding also occurred from the nose and lips; and even nail scratches of the face bled freely. The cord dropped off on the fifteenth day, leaving an oozing stump. The urine was scanty and uratic, sediment marked; and in the last week contained blood. There were progressive emaciation and great thirst. The tongue remained clean; the breath was not offensive. Each attack of vomiting was preceded by facial grimaces, as if in pain. Strabismus and Cheyne-Stokes respiration were present at intervals, after second week. The abdomen below the umbilicus was soft and flat, forming a marked contrast with the bulging epigastrium. Gastric peristalsis was observed; but the pyloric tumor was overlooked. The rectal temperature, throughout the course of the malady, was normal. The persistent, projectile vomiting, receding abdomen, obstinate constipation, and progressive emaciation, prompted a diagnosis of obstruction of the pylorus. The gastro-intestinal hemorrhage was at first thought to be a case of melena; but the subsequent bleeding from different parts of the body found a more acceptable explanation in a dyscrasia, possibly hemophilia. There is no such maternal family history; but a possibly specific one of the father who was treated for an iritis years ago, the case being so diagnosed by an eminent oculist.

The treatment of the infant was expectant and palliative: bromides, chloral, mercury inunctions, and regulation of the breast and artificial feeding. Salt solution by rectum was also employed. Death from exhaustion occurred on the twenty-second day.

Autopsy.—The autopsy was performed fifteen hours after death, by Dr. Barton; the examination being limited to the abdominal cavity. The body was greatly emaciated, weighing about five pounds. The abdomen was slightly distended, but soft and compressible. The liver, spleen, and pancreas showed a healthy appearance. The jejunum was slightly distended with gas; and the ileum was of very small caliber. The cecum contained a dark material; and the same was found in different parts of the large intestine. Occupying the pyloric space, was a cylindrical, firm, smooth, movable tumor, about seven-eighths of an inch in length and one-half inch in diameter. The stomach was opened along the greater curvature, and found to contain about an ounce of dark, thick, tenacious material, composed of milk, mucus, and altered blood. In the mucous membrane were a number of minute cavities which had the appearance of

having been gouged out. The lumen of the pylorus, which was plugged with mucus, admitted the passage of a probe one-eighth inch in diameter. Longitudinal section of the pylorus showed the mucous membrane to be moderately thickened and its folds apparently hypertrophied. The muscular coat measured one-eighth inch in thickness; and the serous coat was apparently normal.

The microscopical examination made by Dr. Edwin Behrend, pathologist, showed a hyperplasia which consisted almost entirely of the circular muscular coat; with here and there, bands of connective tissue separating the muscular bundles. Between the individual fibers in different parts, was found white fibrous tissue. The mucous membrane and serosa were apparently normal. The muscular layer was an eighth inch in thickness, gradually tapering into the normal coat of the stomach.

Conclusions.—1. Pyloric stenosis in infancy is due to the following conditions, either of which may exist alone, but they are frequently associated: (a) Hyperplasia of the tissues of the pylorus, particularly of the muscular coat; (b) simple spasm of the pylorus.

2. The evidence would seem to indicate that the hyperplasia is congenital, and that the pyloric spasm originates after birth.

3. Cases where the symptom complex does not develop until some time after birth, are probably instances of partial stenosis with secondary spasm, or pyloric spasm alone.

4. The pyloric spasm may be due to a neurosis, erosion of the mucous membrane of the stomach or pylorus, or acute or sub-acute gastritis.

5. Since it is tenable that either hyperplastic or spastic stenosis may be present alone, or that the two may coexist, both medical and surgical treatment are of value, but the sphere of each must be determined by the exigencies of the individual case.

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HEREDITARY SYPHILIS.*

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THE vast majority of cases of hereditary syphilis will be met with in hospital service and such has been the case with the material which forms the basis of this paper, for the cases I have followed have occurred in the outdoor service of the Children's Hospital and in the wards of the Foundling Hospital, which usually contain one or more cases of this distressing affliction.

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Recently considerable attention has been paid to the late manifestations of congenital syphilis, the syphilis tarda of the early writers, and it is interesting to note that there seems to be a disposition to extend the period of viability, so to speak, of congenital lues—that is to recognize as specific, conditions which arise many years after birth and to attribute such conditions to birth infection.

According to Fournier, "latent hereditary syphilis may manifest itself at any age, from young adult up to old age," and has been seen in cases between fifty and sixty years of age. Dorland states that in this way only can we scientifically explain the failure of development of late tertiary nervous changes in individuals who are known beyond doubt to be specifically infected. The development of these late lesions can be indefinitely postponed by a judicious and systematic course of mercurials at intervals throughout the patient's lifetime. He notes as well that the later the development of the hereditary symptoms, the stronger the probability that the infection is paternal in origin and of the late tertiary period.

In the last three years there have been some radical changes of the professional views in regard to congenital syphilis and possibly the factor most potent in bringing about this result was the discovery of the spirochete pallida by Schaudinn and Hoffman in May, 1905. This organism has been repeatedly found in syphilitic lesions by pathologists and in the line of the subject of this paper, its discovery in the tissues of syphilitic fetuses by many different observers, would quite revolutionize some views or laws that have stood undisputed for years.

One of the most interesting subjects that presents itself, is that of the respective influence of the father or mother upon the product of conception. It may be well to note, that there has been quite a wide difference of opinion among authorities in regard to this particular point.

If we consider the paternal influence first—we come upon one school of workers who absolutely deny that the male progenitor possesses this power of transmissibility—these are the followers of Oewee, Sturgis, Cullerier, and others. But it has been the experience of the majority, that infection of the father results in transmission of the specific poison to the child—usually without florid syphilitic manifestations on the part of the mother, unless she has been infected by the husband prior to conception. The probability of paternal transmission depends largely upon

certain factors such as the stage of the disease, the virulence of the same in the parent, and the effectiveness of treatment. Fournier states that true syphilitic symptoms are observed in but 18 per cent. of children begotten of syphilitic fathers; nutritive changes are seen, however, in 82 per cent., these being parasymphilitic in nature and due to syphilotoxins rather than direct inoculation with the germ. The father will not transmit the disease to his offspring during the primary stage or early secondary incubation period though he may, and probably will directly infect the mother.

The maternal impression upon the growth and development of the fetus is obvious—but here too, the latency or activity of the disease is the determining factor in the question of congenital infection. In latent periods of the disease, the mother often gives birth to apparently normal children, who, neither at birth nor during their growth, present syphilitic lesions. Such births may be followed by syphilitic progeny, or by abortions, due to renewed manifestations of the disease. According to Mish (*A. J. Der.*, 1906), if conception occurs later than the twentieth day after the disappearance of the earliest syphiloderm, the product of such conception is almost certainly doomed to destruction, abortion of the ovum commonly following from the third to the seventh month. The woman, however, profoundly syphilitic, may abort or miscarry in consequence of the cachetic state to which she is reduced by syphilis, and may thus throw off, as in any cachetic condition, the unaffected germ.

That latent periods do occur on the maternal side, there can be no question. An instructive recital is given by Diday of a woman who had lost seven children from syphilis; she was put under specific treatment during the eighth pregnancy—result, child born healthy, and continued so. In the ninth pregnancy treatment was continued with a like result; in the tenth pregnancy, no treatment, child syphilitic, dying when six months old; in the eleventh pregnancy, treatment repeated, child healthy.

I have had a similar experience in the case of a mother who presented her children for treatment in my service in the Children's Hospital. Two children, one aged two, the other about three, presented the manifestations of hereditary syphilis—especially enlarged glands and mucous patches, the tonsils and fauces of both children being covered with moist specific patches. This was in May of last year and the mother was then pregnant about three or four months. She was sent to another dispensary

and placed upon antisyphilitic treatment and in the end was delivered of a child which appeared healthy when I examined it several weeks after birth.

The usual history, so far as the mother is concerned, is as follows:

In a series of pregnancies, as a result of her syphilitic taint, there occur early abortions; then miscarriages, followed by still-born infants at term, who usually present the ocular evidences of syphilis; later, viable infants who show the luetic lesions during the first three or four months of life and finally, by the birth of a child who neither presents such evidences, nor develops the same during its life. Such is the train of lessening potentiality of a dying virus.

But even after the secondary period, the maternal danger has not passed and Fournier and others admit the transmission of syphilis to the third generation.

Can a healthy mother give birth to a syphilitic child?

The sweeping generality was made in former years that such an event was possible and numerous cases cited in evidence. The enthusiasts even went so far as to inoculate (Caspari, Neuman) women apparently healthy who had aborted with syphilitic children, and such inoculations were negative and were cited to show the verity of a so-called law laid down by Colles in 1837, viz.: "A new-born child affected with inherited syphilis, even although it may have symptoms in its mouth, never causes ulceration of the breasts which it sucks if it be the mother who suckles it, although continuing capable of infecting a strange nurse."

In the light of recent developments in the field of pathology especially by Levaditi and others of the French school, the proposition that the mother remains "healthy" when often procreating a luetic offspring, seems untenable. There can be no question that she may appear healthy and be immune to syphilitic infection, but the reasonable supposition should be, as pointed out first by Boulingier, that the mother has become infected through her diseased ovum and is latently syphilitic.

Even in recent text-books it is not uncommon to find statements such as this—"immunizing substances filtered through an unbroken placenta," but if the findings of Levaditi be confirmed, it would appear that the *treponema pallidum* may pass from the fetal to the maternal parts with facility, and even with the reservation that this parasite may not be the cause of syph-

ilis, it is hardly proper to claim for the placenta the properties of a retentive filter.

It would seem more plausible to regard the apparent healthfulness of the mother who bears a syphilitic child, and her immunity to infection, not as the result of some peculiar antidotal substances generated within her system that shield her from all harm, but as a condition brought about by maternal infection—the mother *has* syphilis, has a nonchancrous form of this disease which may, remaining latent with no discoverable lesions, confer an apparent immunity.

In explaining many of the phenomena of this disease a study of the placenta should, and does yield interesting material for analysis.

There are certain changes in the placenta which are more or less characteristic of syphilis, and have been recognized as such for many years. Virchow first pointed out alterations in this tissue in syphilis. Frankel described the hypertrophy, malformation and extreme friability for the villi which is characteristic of this disease and which results from the peculiar cellular infiltration of the tissue (Dorland).

These investigators have shown that each villus of the affected area becomes hypertrophied and abnormally club-shaped, and is surrounded by hyperemic or thrombotic vessels. In addition its epithelium undergoes a process of fatty degeneration. This results in a general increase in size of the organ, a morbid softening and a loss of color so that it appears pink or even a grayish white. The surface is more or less mottled by the occurrence of infarcts.

The interference with the blood supply of the villi and the occlusion of the blood-vessels of the cord by the excessive cellular deposit, affect materially the nourishment and circulation of the fetus, and are the immediate cause of the frequent death of the ovum. Thus it would seem that disease of the cord and placenta is really more productive of destruction of the fetus, than the syphilitic poisons within the body of the embryo itself.

Menetrier and Rabens-Duval as well as Nattan-Larrier, Bosc, Wallich and Levaditi and other recent French and German pathologists have found the spirochete pallida in the placenta of congenital syphilis.

While upon this pathological subject, it might be well to direct attention to the rôle of the spirochete or treponema, in the disease under discussion.

This organism, discovered by Schaudinn and Hofmann in 1905, is a very fine spiral body 5-12 microns in length, with 5-10 coils, sharply and regularly wound like a corkscrew. It stains with difficulty, requiring three or four hours by Giemsa's or Nocht's stains, 2-3 by Kresylecht violet, and is better stained after twenty-four hours in any of these stains.

It must be distinguished from spirochete refrigens, a common saprophyte of mucous membranes especially of the mouth, which is thicker, often larger, with three to six irregular turns and stains much more rapidly with all dyes.

According to Ewing, the usually constant demonstration of the spirochete pallida reported in syphilitic lesions, the apparent absence of perfectly typical forms in considerable number in other lesions, their frequent presence in the lymph nodes and possibly in the blood, the large numbers reported in some cases of congenital syphilis and their demonstration in experimental syphilis in the monkey, constitute a formidable array of evidence in favor of the view that spirochete pallida is the cause of syphilis.

It would be beyond the scope of this paper to discuss the finding of this parasite in the various syphilitic lesions of adult life, but it might be said that it has been found in primary, secondary and tertiary lesions by an increasing number of skilled observers.

But of its presence in the placentas of syphilitic mothers and in the organs of congenitally luetic children, it is necessary to take cognizance of the work of the French syphilographers especially, led by Levaditi, himself, the inventor of one of the most successful staining methods for the detection of the elusive spirochete.

Wallich and Levaditi report a study of thirteen cases from the Baudeloque clinic in the service of Pinard (*Compt. Soc. de Biol.*, Paris, 1906). Their object on studying these placentaë was to see if syphilis would reveal itself in the placenta, when that malady was proven or strongly suspected in either of the parents.

Of their thirteen cases, there were two cases of certain maternal syphilis, two of proven paternal infection, and nine cases in which the diagnosis was made because of clinical symptoms—interruption of the pregnancy with fetal death, and maceration, and the presence of pemphigus neonatorum. One infant alone, in the thirteen observations, presented syphilitic manifestations from the day of its birth and it was in the placenta of this case that Wallich and Levaditi were able to demonstrate the spirochete pallida.

This child was delivered about eight months after the end of the last menstruation, of a mother who showed no apparent indication of syphilis. She had three children by her present husband, the first and the third apparently normal, the intermediate pregnancy aborted at about three months. The child had a plantar and palmar pemphigus and from scrapings of a bulla situated upon the plantar surface of the right foot, made the second day after birth, the treponema was demonstrated.

Histological examination of the placenta revealed a general thickening of the vascular walls, especially of the vessels of the villi, and an infiltration of polynuclear leukocytes into the intervillous spaces.

The spirochete in great numbers were found grouped irregularly—in greatest numbers in the villi. They also found some spirilla in the maternal tissue and they call particular attention to this condition which is quite rare.

M. Bosc (*Comp. So. de Biol.*, Paris, 1906) has studied the occurrence of the treponema pallidum in the lesions of hereditary syphilis, in the circulating blood and in the placenta. His results were always positive in the liver, and lungs, positive in one case in the spleen, negative for the kidneys and brain, positive in one case for the circulating blood. In one typical case of congenital lues, the ascitic fluid and the capsular hepatic lesions contained the spirochete, which, however, was absent in another case of nonsanguinolent ascites. The scrapings of the placenta were also negative. In specimens of the liver and lung, the treponema was always found in abundance, but not always in pure forms; often its morphology varied, sometimes it was thicker or less spiral, and in the deeper organs of one infant which was still-born, the spirochetes were found very thick and with but two or three spiral turns.

In the liver especially Bosc found the spirochete in abundance, "swarming," as he expresses it, and there they formed the center of caseous foci found about the distribution of the blood-vessels—especially the portal radicles. "The vessels are enclosed in a 'muff' (mandron) thick with spirochetes, the vessel walls permeated and the parasite free within the vessel as well as without, in the perivascular spaces." The organisms were very abundant in the newly-formed connective tissue of the organs—especially the liver and the lungs.

Bosc's conclusions are as follows:

Treponema pallidum is especially to be found in the pulmonary

and hepatic lesions of hereditary syphilis—as well as in the circulating blood and within the vessels. It can be found in the capsular exudates of the liver, in the foci of softening within this organ, and in the hemorrhagic ascitic fluid.

It is to be found in all the newly-formed connective tissue and vascular lesions of hereditary syphilis.

The spirochete *pallida* has been demonstrated in the placenta of hereditary syphilis by Nattan-Larrier and Brideau. These writers carried on a series of studies on syphilitic placentas which were collected with especial care, hardened in formalin and sectioned in celloidin. Eight placentas were studied by the ordinary staining method of Giemsa's marine blue, etc., and four were treated by the nitrate of silver-pyrogallie acid method of Levaditi. They obtained an especially beautiful preparation from the placenta of a woman with secondary syphilis whose fetus, aged eight and one half months, was macerated. They found the spirilla in the necrosed villi, in the walls of the arterioles, and in the maternal surfaces of the placenta. Nattan-Larrier and Brideau, have discussed the passage of the spirochete *pallida* between the placenta and maternal parts and claim as a result of their studies, that it is very easy to recognize the spirochete in the protoplasm of the large superficial cells of the placenta, when they employ the technic of Levaditi. The writers claim the direct transmission of the parasites by the villousities of the placenta, to the maternal parts, but believe that the principal rôle in such transmission falls to the cells of Langhans.

The writers claim that with necrosis of the villi, leukocytes can pass into the maternal sinuses from the fetal parts, or maternal leukocytes emigrate into the fetal villousities—in either case proving possible carriers of infection.

They conclude as a result of their studies that two processes are possible in explaining the interchange of spirochetes between fetal and maternal structures. Firstly, a change in structure of the villus and the passage of the parasite through the mediation of perivascular infarcts with, or without, the intervention of leukocytes—a pathological process. Secondly, transmission of the treponema by the proliferating cells of Langhans—a physiological process, an important factor because of the ability of the cells of Langhans to penetrate into the vascular systems of the decidua.

Mention has been made of the finding of the treponema in

various organs of the fetus but it would be well to note certain pathological changes which are more or less constant in the bodies of infants dead of congenital syphilis. Death of the infant may be due to syphilis and yet the necropsy fail to reveal any characteristic lesions.

The distinctive feature of congenital syphilis is an osteochondritis, especially of the long bones, most marked in the upper end of the femur which may be exposed in a limited autopsy by a trochanteric incision and these bony changes observed. This is sometimes known as Wegner's sign and consists of a broad irregularly notched yellow line of suppuration and fatty degeneration separating the diaphysis and epiphysis of the femur and other long bones. This bone lesion is constant and is of such extent that often during life, the thickening of the region about the epiphyseal line can be palpated—a circumstance of considerable aid in diagnosis.

The visceral changes are next in order of importance. The liver invariably shows evidence of interstitial change, is usually much enlarged, and according to Holt is probably more frequently involved in the fetus and newly born infant, than any other organ. A gummatous form has also been described, as well as a combination of these varieties. In the interstitial, the more common, there is cellular infiltration between the tissue cells, with new connective tissue formation—subsequent atrophy and obliteration of included structures.

The lungs and spleen show much similar connective tissue changes and dependent upon the stage of the syphilitic disease, there may be present the characteristic lesions of the specific granulomata.

Time will not permit more than a cursory discussion of the symptoms of hereditary syphilis, but these might be classified into three groups, the first, comprising the large number of still-born infants, in which pregnancy is interrupted at various stages or may proceed to term. The second, and more familiar group, is that composed of the early syphilitics—those who present symptoms of specific infection at birth or shortly thereafter. Then there is a third group, of those cases often most obscure in nature, which only show syphilitic lesions at much later periods of life—the syphilis tarda of the older writers.

If the symptoms be present at birth in a living child one may be sure that there is a severe grade of infection and infants of this type live usually but a few days.

The most characteristic symptoms are the wasted, wretched appearance of the new-born child and the presence of an extensive eruption, usually pemphigus-like in character. Large bullæ are present most often upon the skin of the soles and palms, and from the fluid of such, the *treponema pallidum* has been recovered by French observers.

In the majority of cases, the manifestations of hereditary syphilis do not appear until three or four weeks after birth. The very earliest symptoms according to Holt are seen from the second to the sixth week. Early efflorescence is a sign of especial malignancy and if four months pass without clinical evidence of the disease, the child will probably, but by no means absolutely, escape the disease.

In the usual run of cases it is the eruption that first alarms the mother and sends her to the physician for advice. In rare cases, the general symptoms of cachexia may antedate the eruption and other local signs, but the rash and the appearance of nasal symptoms are usually early and distinctive. These infants the mothers tell us in the outdoor service, are "born with a cold in the head" in which statement there may be a modicum of truth. The association of "snuffles" with an eruption upon the face, neck, hands and feet, and the anterior surfaces of the extremities, with fissures about the lips and anal region, usually makes the diagnosis not a difficult one. Later there are to be found mucous patches in the mouth, on the inner surfaces of the lips and especially about the fauces. These ulcerations may be alarmingly extensive but are for the most part very superficial in character. In the case of two children, aged two and three years, under treatment at the Children's Hospital for hereditary syphilis, the mucous patches covered the pillars of the fauces and encroached largely upon the uvula. It was rather strange to note the resemblance in the two sisters whose throats at first glance looked almost diphtheritic.

In syphilis tarda, which has attracted no little notice in recent years, the manifestations of the hereditary poison may assume obscure and bizarre forms which will tax the acumen of the clinician and may prove very baffling unless the stigmata of malformed teeth or other equally convincing signs be present to aid in clearing up the question.

The more remote the initial appearance of such lesions after birth, the more difficult becomes the task of recognition; and yet the possibility of the transmission of specific taint, especially

when parental syphilis is known or suspected, should be borne in mind in arriving at a diagnosis, for Taylor recently reports a case (*N. Y. M. Jr.*, Oct., 1907) of the development at the age of thirty of classical hereditary lesions without antecedent manifestations in one subject, in whom there was no infection by the acquired disease.

There may be found in these late cases, lesions which affect almost every part of the organism—glandular enlargement, amyloid degeneration of the viscera, bone changes, gummata, both superficial and deep, joint effusions—the syphilitic synovitis of many writers—and lastly obscure disorders of the nervous system and of nutrition—the parasyphilitic lesions of the French school. Idiocy, epilepsy, tumors of the brain and cord, paralyses and even hydrocephalus have been traced to the inherited disease.

R. R. Campbell in the *Am. Jr. of Derm.*, 1906, has collected a number of cases of late congenital syphilis from the literature and draws attention to a triad of symptoms of greatest value in establishing a diagnosis, namely—Hutchinson's teeth, interstitial keratitis, and a particular form of deafness called labyrinthine deafness.

The treatment of syphilis in the infected infant differs but little from that in the adult. Mercury should form the basis of such treatment and one finds divergent views as to the best mode of administration of this remedy, but a unanimity of opinion as to its utility. The iodides, excepting those of mercury, find no place in the treatment of hereditary syphilis.

Hypodermic medication for obvious reasons can but rarely be employed so that one must rely upon inunctions, preferably of mercurial ointment in ten to fifteen grain doses or in the exhibition of remedies by mouth. The latter, outside of hospital practice, seem to be preferred, for the drawbacks of inunction treatment will be appreciated readily by those of us who have had reason to employ this therapeutic measure.

Kerley recently advocates the use of the bichloride of mercury which he gives in tablet form, as much as one-fortieth of a grain being administered to the youngest infants during twenty-four hours. The old treatment of gray powder finds some advocates, but it has been largely displaced by other forms of mercury of greater potency.

Leaving aside the question of individual preference as to the form of the drug, the fact remains that it must be given in suffi-

cient doses to thoroughly impress the patient, and another fact of equal importance is that treatment here is a question of years, as much if not more so than in the acquired form of adult life.

There is a rule of therapeusis which is now gaining an ever-increasing number of followers, that a syphilitic should be treated one month out of every twelve—that is, after the usual two years' continued treatment. In the syphilitic child this rule finds an especial application nor is it difficult to secure the cooperation of the mother in such persistent treatment, if we elicit her aid through a rational explanation of the malignant influence a *lack* of such care will exercise upon her offspring.

SCHOOL-AGE.*

A STUDY OF THE CHILD FROM BIRTH TO PRIMARY SCHOOL.

BY

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THE normal child makes the normal man. I feel strongly that the greatest factor in the physical and mental growth of the child is its diet in early life. That the breast-fed child is early stronger mentally and physically, that it is surer of quicker and deeper mental growth, I have seen repeatedly illustrated. Race, stock, comforts, food, locality and climate influence this growth. Nervous women beget nervous children, while from courageous mothers we find courageous offspring. Malnutrition, therefore, within the first year of life, I believe to be the greatest hindrance to normal growth. The infant at birth is physically and mentally helpless, the body powerless, the senses not awakened and the brain and its functioning power immature. The ear does not distinguish sounds, the eye does not see well and there is no color or form perception. The brain of the new-born does not lack the principal fissures and convolutions, but, says Pryer, they are shallow while the secondary and tertiary fissures are totally wanting. Not until the fifth week, according to Sarnoff, are the accessory sulci and the convolutions present. Rachford says that at birth the brain is morphologically and functionally the most immature of all great body organs. From birth to seven years it develops enormously in weight, structure and function, then slowly increases in weight to eighteen years, but the increase of function does not keep pace with the increase of weight.

* Read before the Harvard Medical Society, New York, April 25, 1908.

The child's brain is almost as large as the brain of the adult while the functional development goes on. At birth the nervous system is immature. The metabolism of the normal, immature nerve-cells of the child must be rapid enough to supply waste and also material for growth and development. In the fetal brain the individual cells are distinct and separate from each other, they must first undergo a process of elaboration; in other words, they must bud out and branch.

The earliest movements of the child are reflex and not the result of activity in the higher cerebral centres. As the brain develops each stage is marked by more medullation, the fibres of the cord, medulla oblongata, pons, varolii and the corpora quadrigemina are the first to obtain their myelin sheaths, and therefore they functionate before the higher cerebral centres. Undoubtedly, the first sensations of the infant are joint sensations, muscle sensations, etc., as the feeling of the limb, the sucking of the thumb, the pulling of the toes, the fingers and of the nose. This I beg to call personality-suggestion and is the first step for the infant to awaken to his own evolving ego. This period often begins with the second month; no set time, however, can be stated. The first attempts at steady attention are directed to moving things around him, to persons talking and to those singing, to whisperings, to the wind sighing through the trees, the movements of animals and of persons. Gradually imitation comes into play. He feels his head as does his father, he imitates the father's and mother's movements with his feet and hands. With the evolution of the ego must come speech. The infant cannot speak coherent sounds because its impressive, central and expressive organs are not fully developed. Again, the sounds produced are dependant upon the growth of the brain, size of the tongue, soundness of the hearing apparatus, of the teeth, etc. The normal child can understand much quicker than he can speak, and forms of his own accord and to himself sounds that occur in future speech. Says Pryer again, in children the formation of ideas is not bound up with the learning of words, but it is a necessary prerequisite for the understanding of the words to be learned first and therefore for learning to speak. Before the child uses a syllable or understands a single word it has a number of ideas which it expresses by looks, cries and movements. Therefore, the mother should form general ideas of the child's movements, cries, impulses, sleep, dreams, personal preferences, muscular efforts, attempts of expression, games, favor-

ites and the like. There are no complex concepts or high ideas without speech. The connection between the ear and the speech-centre is more practical than that between the eye and the speech-centre. With a child that does not speak but is beginning to repeat syllables correctly and to associate them to primitive ideas the act of imitation takes longer than with a normal adult, but the paths in the brain which he makes use of are shorter absolutely and relatively; absolutely because the whole brain is smaller, relatively because the higher centres are still lacking. The child, in short, learns thusly: first he has ideas, then he imitates the sounds, syllables and words spoken for him, finally associating the ideas with the latter.

The capacity for thought is inborn. Through the repetition of sounds heard, the child associates ideas definite in character. With verbal announcement of his own ideas, sensations and perceptions of tangible visible objects he has not yet attained advancement towards higher ideas or concepts, for this he must have memory and association. He learns higher ideas and concepts from the experiences of adults, such ideas as of the Creator, freedom, immortality, eternity and the like. Usually such words come before a proper understanding of them. Froebel allowed children of themselves to invent and discover. All concepts exist only after many sense impressions have been received. The concepts often formed at an early age remain the longest because the brain wants food of sure impressions for functioning. I believe with G. Stanley Hall that the country children get ahead of the city children because their mental impressions are less in number and therefore they are more vivid. In the city the children see and hear too much at too young an age. The country children see nature, feel nature and gradually begin to understand and love nature.

With this foreword, let us follow the mental and physical growth of the child from the nursery to the primary school. The most important period of the child's life after the first twelve months is the nursery. This should be a large, sunny room, well ventilated, facing, if possible, the south. The child should wear loose clothing, preferably of linen, that the body movements be retarded just as little as possible. Weekly weighings and daily bathing of the child should be the necessary nursery routine. The food should be of the plainest, at regular intervals, and the eating of meat or many eggs should be prohibited at first and afterward given in very moderate quantity after the

fourth or fifth year. Singing, yelling, playing and sleeping must be encouraged. An open-air playground should be in close proximity to the nursery. Simple toys and simple games should be given him that he may invent and investigate. His questions as to why must be answered patiently and intelligently. The language of the nurse should be pure, she using no slang or baby-talk. The will is to be directed into certain paths and the mental impressions regulated. Corporal punishment must not be permitted, the child punished by depriving it of some cherished treasures or much-desired toy. Care must be taken that nothing systematic not even the letters should be taught a child at this period. The nurse must be a girl of some education that she may with the lips be able to frame words for the child to imitate. At the age of seven the child is sent to the kindergarten. Not before this time, however, as the usual child before this time is physically and mentally immature. Fortunately, kindergartens are provided by our excellent Board of Education for the poor of this city and many churches provide them for the poor in their parishes, so that the poor as well as the better-to-do may gain the benefits from this excellent institution. At about this time the child has begun to feel his strength and possibilities; before this he usually feels weak and resisting. In New York this kindergarten movement has grown to great proportions. In the year 1907 in the borough of Manhattan alone the number of classes were 208 an increase of 11.2 per cent. over the year before; the number of teachers was 192, an increase of 4.3 per cent.; while the average register of pupils was 5484, showing an increase of 8.1 per cent. over the preceding year. In this city also the Board of Education is allowing its teachers to visit the homes of the pupils and hold conferences with the mothers to encourage mother-play and song. So-called mothers' meetings are held once a month to instruct the mothers in the care and amusement of their young children. The room of the kindergarten should be large and well ventilated, a room where no other kinds of exercises take place, containing plants, flowers and pretty pictures should be distributed around it. System in moderation should be here begun, but care taken that the child's nervous system be not overstimulated, resulting often in chorea, hysteria or in extreme nervousness. A spacious playground should be provided where after an hour or so in the room, games can be played in the open during pleasant weather. Clay moldings, the cutting of paper designs and musical drills are excellent forms of amusement, as

is also the singing of the children in unison. The child must not get too tired, and the instructress must change the amusement when she sees fit. The mental concepts are thereby made stronger and more impressive, the mind rendered more vigorous the general intelligence more surely promoted and the memory and reasoning powers strengthened. The teacher should foster the child's happiness, should teach it the lesson of patience, truthfulness, contentment, self-denial, charity and fortitude. The gaining of the child's fixed attention should be begun. Kindergartens should amuse, not teach. Oftentimes I have seen the work degenerate into a mere trick and the teacher becoming a machine. I believe that nearly two out of every three children are irretrievably damaged from poor instructresses, too long sitting postures and drills, with not enough freshness and change. Questions asked should be patiently answered and the child's expressions thoughtfully studied. At the age of eight, or better nine years, the latter age being a far more fitting one for a precocious child, who should be kept in the open air, as well as for the phlegmatic backward child who should be gently and patiently taught at home or in some school devoted to just such pupils, the child enters the primary school. As in the kindergarten, the sexes should be together. In this city last year the average number of pupils to a teacher was in the elementary grades forty-two, in the kindergartens 28.19 per cent. of our city children are under, while 12 per cent. are over age; the compulsory school-age being eight to fourteen years. I believe in women teachers to teach the primary grades, the men to teach the older children. I agree with Mr. Maxwell, superintendent of our city schools, in Mr. Herbert Spencer's conclusions in reference to women teachers for the young, that women respond more readily to pity and to appeals of equity than do men; they are, moreover, guided more by generosity; their minds dwell more on the concrete and proximate; they see more the simple, direct consequences of an act; they realize the immediate public good, they stand more in awe of power and of authority, but they understand a child's nature better than do the men.

There are confronting a teacher in every school four types of pupils: the sanguine, the choleric or passionate, the melancholic and the phlegmatic. In our schools there are too few teachers to pupils, many of these being bigger-brained than practical. We need more and more the instructress who, paying attention to the graces and refinements of a home, instill just these qualities in the

minds of children whose home is a hell, whose fathers are tyrants and whose mothers are overworked. At this age there is a great intellectual awakening in the combination, analysis, destruction, investigation, penetration and in the unveiling of the veiled to a child's mind. In the school the ego should be developed, work made easy, and the hours for sitting still shortened, cramming and home work not permitted. Plenty of out-door life and the not too rapid changing from one subject to another should be remembered. The earlier the imperfectly developed nervous system is subject to strain in a one-sided manner, so much the earlier does it become dulled and less plastic, but the longer it retains its receptivity so much the longer does growth last. The "interested in much" man, remains young the "indifferent" is always old. As an illustration of this one-sided method I cannot refrain from citing an instance mentioned by Sir John E. Gorst in his book "Children of the Nation." The school superintendent of a school of young children in Greenwich, England, had selected the subject of animal physiology for study. A little girl was asked to describe the human body. She described it as follows: "The human body consists of three parts: the head, chest and 'stummick.'" The head contains the eyes and the brain if any: the chest contains the heart, lungs, and a bit of the liver while the "stummick" contains the vowels which are a, e, i, o, u, and sometimes w and y." You see the confusion in this poor child's mind.

And now just a word as to the classification of all school children. Every child should be examined by a physician before being allowed to enter school. The family doctor in the case of the well-to-do, a physician provided by the city in the case of the poor. Choreiac, hysteric and markedly nervous children should be barred out and sent away to the country or to institutions similar to that in Charlottenburg near Berlin to build up and regain their vigor. Children suffering from adenoids, ear disease, rickets, malnutrition, syphilis, tuberculous diseases of the glands, eye affections, and bone conditions should be treated. Corporal punishment should be abolished and examinations or competitive exercises rigidly tabled. Finally two rules must be borne in mind by the educator and layman; spare the organs of sense and the nervous system and educate them and by no means destroy that which in years makes the master; the child's ego.

DIAGNOSIS OF THE COMMON SKIN DISEASES OF CHILDHOOD.

BY

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SKIN diseases in children differ little from those observed in adult life. Children, however, not being subjected to various occupational and trade influences, do not exhibit the diseases which are due to irritation. They seem more susceptible to pus infection: therefore, secondary infection must be suspected and, in fact, looked for in making our diagnosis in these eruptions.

The most common eruption found on the face and scalp is eczema. Symmetrical, patchy lesions, composed of papules, pustules or scaly patches occur upon cheeks, forehead and chin. This form of eczema is subject to rapid changes of type: some days being pale, and scaly on other days showing moisture or crusting. Itching is always a marked symptom. Although the borders of these lesions have a certain definition, there are always present outlying primitive lesions, such as papules, pustules or ruptured vesicles. This form of eczema is always associated with, and is probably due to, intestinal fermentation. Similar papular, pustular or scaly patches are also seen on backs of forearms and hands and on fronts of lower legs. On the scalp we frequently find crusting lesions generally involving the vertex. The underlying skin is reddened and dry. There is no moisture nor vesiculation present.

This parasitic type of eczema is very frequently associated in nursing children with the patchy type described on the face. Associated with the scalp affection we find scaliness in the eyebrows, inner sides of lobe of ear and frequently sharply defined, reddened patches behind the ear. In this parasitic form the tendency to extension downwards is always marked; therefore, in more severe grades of the disease we notice reddened patches in the folds of the neck and involving the axillary regions and groins.

Pustular eczema occurring upon the head and around the ears is an infectious condition associated with *pediculi capitis*. The condition is really caused by scratching and infection. Around

the ears in this condition we find a moist crusting type of eczema.

Another type of milder grade seen frequently in children occurs around the mouth and cheeks in quite sharply-defined circinate lesions. Some of these lesions show scarcely any redness, simply a scaling surface; others from irritation are more reddened. This type is seen more commonly in winter and is frequently found associated with intestinal disturbances. In some cases it is due to reflex conditions, as cold, combined probably with the use of certain soaps.

True impetigo contagiosa, which occurs most commonly upon exposed surfaces, is more frequently met with on the face. It occurs usually in various-sized lesions, from the small clear vesicle to the large circinate crusting lesions. The vesicle always spreads peripherally, flattens in the center and forms a superficial yellow crust which is always smaller than the lesions proper.

In a case of impetigo of any duration we see lesions ranging from the primitive vesicle to the circinate lesion. This impetigo may be contracted, and generally is, from other children, but in other cases it seems to be due to infection from *pediculi capitis*.

Molluscum contagiosum, occurs generally on the eyelids, around the nose and mouth and upon the hands. Lesions of this disease have a pearly appearance, giving the impression of fluid contents. The larger and older lesions of molluscum show an umbilicated center. These lesions when broken discharge a cheesy material. They vary in size from a small pin head to, in extraordinary cases, the size of an apple. The average size, however, is that of a small pea. Ordinary molluscum lesions show no redness, and it is only through infection and irritation that we have a reddened base and a pustular condition present.

Psoriasis in children presents itself in localized patchy lesions with silvery white scales, although in some cases where there is much associated seborrhea the lesions are covered by yellowish and fatty crusts instead of the dry scales of the ordinary type. On scraping with the nail or instrument the scales fall in in a shower-like manner.

Papular urticaria is certainly the most common eruption of the generalized type seen in children and is second only to eczema in frequency. The wheals appearing upon the trunk or extensor surface, instead of disappearing, as is common in adult life, become capped by a small red papule or a tiny clear vesicle. The

child scratches or rubs off this tiny papule or vesicle, the wheal proper subsides and there is left the so-called scratched-top lesion. In severe cases the child's trunk and extremities become covered by these scratched-top lesions. At this time the clinical picture is made up of fresh scratched-top lesions, wheals upon which are visible vesicle or papules, old stains of fading lesions and possibly some pustules from secondary infection.

In papular urticaria, even of some duration, the skin rarely becomes infiltrated or pigmented. The scratched-top lesions which form the type of lesions of papular urticaria are similar in almost all respects to the lesions found in scabies in children. Therefore, in making our differential diagnosis, the fact that in scabies certain situations are always affected must be taken into account. In scabies the scratched-top lesions are found in the axillary region; in male children, upon the penis; upon the flexor surface of the wrist, between the fingers particularly—and a location which should always be sought for, on the palms and soles. In very young infants various-sized bullæ are frequently seen upon the palms and soles.

In papular urticaria these situations are practically never affected; on the contrary, we have the extensor surface of the extremities—thighs and arms—as the favorite location. Bear in mind also that in papular urticaria—and that applies even to the milder types of the disease—that the cheeks are more or less affected; whereas in scabies we can fairly say that the face is never affected, except, perhaps, in an occasional case in a nursing infant from infection from the mother's breast.

Prurigo mitis appears upon the extensor surfaces, the arms, legs and cheeks, and forms tiny pale red papules. Lesions are very itchy. Through constant rubbing and scratching the skin becomes excoriated and in cases of any duration shows more or less infiltration and pigmentation. This chronic skin eruption may begin in this form or may follow a persistent recurrent papular urticaria. The condition is a very obstinate one.

The most severe grade of prurigo, or prurigo ferox, is fortunately not seen often in this country. In this type the lesions described are much more marked, skin more thickened, itching more intense and more of the body surface is affected.

Unquestionably impetiginous lesions are more common with scabies, although it should be borne in mind that in severe cases of papular urticaria one must expect to see a certain amount of infection.

There is a type of impetigo which occurs in children which may or may not be associated with pediculi capitis, which differs from the impetigo contagiosa described above. In this type the lesions lack the superficial character, the sulphur-yellow crust, have more of a tendency to infiltration with much more distinct areola. This occurs not only on the face, but will commonly be found in children around the buttocks and on the legs. It seems to be a pure infection of the skin and apparently is not in any way associated with digestive disturbances.

Xeroderma shows itself upon the face and body, more particularly upon the extensor surfaces of the extremities, as a diffuse dry scaly condition with no inflammatory signs.

In Ichthyosis, the scales are larger, darker in color and more generalized.

In hereditary syphilis, in addition to the shape of the head, sunken nose, snuffles and general debility, we have definite skin lesions. We see the same macular eruption over the hands, feet and body; papules around the lips, nose, syphilitic intertrigo involving the buttocks with erosions, most papules around anus and genitalia. Syphilitic intertrigo seems to be simply an exaggerated intertrigo occurring in poorly nourished infants.

In pemphigus various-sized bullæ rise upon the surface of the body from a slightly reddened base. In cases of scabies where the bullæ of hands are very marked a diagnosis of pemphigus has been made. It should be remembered that in pemphigus we have the bullæ only, and not the associated scratched-top lesions which are found upon the body in scabies.

Tinea tonsurans presents itself upon the scalp either in the form of tiny well defined slightly scaly patches or of more reddened infiltrated lesions. The hairs are broken in these patches in a stub-like manner. From irritation and neglect and secondary infection the patches become more thickened, elevated and boggy to the touch and covered with superficial pustules—the so-called kerion celsi.

Alopecia areata shows as in adult life, smooth, bald, circinate or irregularly oval bald patches without redness or any signs of inflammation. These patches in certain cases give an appearance of depression.

PERTUSSIS.*

(Tussis Convulsiva. Whooping-cough.)

BY

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WHOOPIING-COUGH is a highly communicable, epidemic and sporadic affection, during its height characterized by sudden more or less frequent paroxysms of coughing which are from time to time interrupted by deep, stridulous inspiration and followed by a period of apparent euphoria of variable duration. The specific germ of the disease is still unknown.

As a rule, the course of pertussis is separable in three distinct stages: *stadium catarrhale*, *convulsivum* and *decrementi*.

The *stadium catarrhale*, which lasts about ten days, begins after an incubation period of from five to nineteen days. It is sometimes preceded by a few indefinite prodromata, consisting of loss of appetite, languor, restless sleep, and slight fever, and as these symptoms gradually disappear they become replaced by those of a simple catarrh of the upper air passages, so that the advent of the grip or measles is often suspected. At first the cough is short, hacking, sometimes croupy in character, but steadily it grows worse, though returning at longer intervals. It is especially troublesome at night, and what, as a rule, is particularly characteristic of the whooping-cough, the cough fails to respond to the remedies usually efficient in ordinary "coughs and colds." Toward the end of the catarrhal stage the child is off and on attacked by a paroxysmal cough, thus indicating the early advent of the second, convulsive stage of the affection.

The *stadium convulsivum* may last from two to four weeks or, if left to run at random, as many months. The cough is violent and explosive, each paroxysm being often preceded by a slight aura, by vomiting, sneezing, etc., so that older children are usually aware of its approach.

Children able to walk usually run towards a person or object to support themselves during the attack, and infants manifest the approach of the paroxysm by a sudden outburst of crying.

* In part taken from advance sheets of the author's text book on Diseases of Infancy and Childhood.

Each paroxysm which lasts from one-half to five minutes consists of a number of a short, barking, expiratory acts of coughing, from time to time interrupted by deep whistling or stridulous inspirations—which constitute the “crow” or “whoop”—and is ordinarily (may be followed by a second or third fit of coughing) concluded with the expulsion of a glassy, tenacious mucus and often also vomiting of food residue. During a paroxysm the face is at first red, then cyanosed and the veins in the neck swell. As the attacks grow worse, there is considerable venous stasis, puffiness of the face (which remains occasionally permanent) especially at the eyelids; there is bleeding from the nose and throat, in the skin, conjunctiva, more rarely from the ear (rupture of the drum-membrane, which heals spontaneously), in the meninges, etc. In delicate and young children a paroxysm is not rarely associated with involuntary defecation and urination, and at times also general convulsions. The number of paroxysms varies between ten and sixty in twenty-four hours. They are more frequent with the patient living in unhygienic surroundings, after overloading of the stomach, on excitement from any cause (crying, laughing, etc.), irritation of the naso-pharynx and larynx, etc. In mild and moderately severe cases the child is apparently quite well between the attacks; in very severe cases, however, the patient is weak, pale, emaciated and suffering from troublesome bronchitis and often from a number of other grave complications soon to be related. Under proper treatment the paroxysms in uncomplicated cases are, as a rule, more or less checked after from ten to twenty days. It is followed by the regressive stage, *stadium decrementi*, the attacks become less frequent, they lose their typical character, the cough returns to the original catarrhal type and finally abates entirely. This declining stage ordinarily lasts for from two to three weeks. Occasionally, however, especially in cases exposed to unsanitary conditions and careless treatment, this stage may continue for months and be interrupted by relapses which often undermine the patient's constitution and lead to irreparable lesions in different organs of the body.

Diverse complications and sequelæ have been noted: Of the lungs: capillary bronchitis, broncho-pneumonia, emphysema, and bronchiectasis, phthisis and acute miliary tuberculosis (as a result of caseation of the bronchial glands); of the heart: dilatation, pericarditis, and myocarditis; of the brain: diverse paralyses (hemiplegia, facial, laryngeal, etc.) hemorrhagic or tubercul-

ous meningitis, encephalitis, softening of the brain, mental affections, such as imbecility, idiocy and different forms of insanity; of the spinal cord: myelitis, polio-myelitis, hemorrhagic inflammations and polyneuritis; of the ears: otitides, with or without permanent deafness; of the eyes: amblyopia, amaurosis; also nephritis, sublingual ulceration (as a result of friction of the sublingual parts against the teeth during a paroxysm) severe epistaxis, and emphysema cutis from rupture of some pulmonary alveoli. Delicate, especially bottle-fed babies, not rarely suffer from gastroenteritis with subsequent marasmus. Finally, sudden collapse from respiratory and heart failure may ensue at the acme of a protracted fit of coughing.

Fortunately, the cases are not all of so grave a nature and so dreadful in their consequences. Numerous abortive cases are on record in which the second stage is devoid of the "whoop" (sometimes replaced by attacks of sneezing), and the third is of very brief duration, so that in the absence of an epidemic or a definite source of infection there is justification for a doubtful diagnosis. When the whoop is absent some assistance in the diagnosis may be obtained by a careful examination of the blood, which will show that during the second stage the polynuclear cells are increased twice in number, and the lymphocytes about four times. Of diagnostic importance is also the fact that the urine has a high specific gravity (1022-32) contains an excessive amount of uric acid crystals. The diagnosis is often almost impossible during the first stage of the affection especially if following—which is quite frequently the case—measles, and time alone is the only reliable guide.

No other communicable affection of childhood is as lightly regarded by the laity and as carelessly treated by the physician as that under discussion. Notwithstanding the facts that it prevails during the greater part of the year; that its mortality ranges between 4 per cent. to 6 per cent. as an immediate result of the disease and at least as high as 10 per cent. in consequence of complications and sequelæ—thus demanding a greater number of victims than typhoid and pneumonia combined—no strenuous effort is being made to still its ravages, to arrest its spread or to abort its course. The fallacious impression has gained firm ground that whooping-cough "must run its course of from six to eighteen weeks," and even the scientific, practical physician wisely nods his head in affirmation and despair, lest he be ridiculed by the therapeutic nihilist. One has to be bold to venture to

claim success in allaying the spasm; reducing the number of paroxysms, and preventing the dreadful complications of the disease; and the one who dares to proclaim the possibility of cutting short the lengthy course, courts everlasting infamy. All the same, the severest attack of whooping-cough properly treated may be rendered almost innocuous or at least free from grave consequences..

As soon as the diagnosis has been established with any fair degree of certainty (even earlier where direct infection is demonstrable), the patient should be isolated and the expectoration disinfected. For the latter purpose a sputum cup is very helpful. Isolation should be practised principally during the expectorating period—at least three weeks.

Fresh air being the most essential and efficient therapeutic measure, the child should, except in the presence of grave complications, be kept outdoors the greater part of the day, and the rooms constantly aired with the patient indoors. Whenever possible, two or more rooms should be made use of. The food should be bland and strengthening, and given in small amounts, preferably after the paroxysms. The clothing should correspond with the season of the year. We possess no ideal specific against the disease, but a great deal can be done to lessen the number and severity of the paroxysms by resorting to the following medicinal agents.

R Olei eucalypti ℥iv.
Tinct. benzoini comp. q. s. ad f ℥ii.

M. Sig.—℥i in a pint of hot water to be used for inhalation through a croup kettle three times a day.

R Extr. belladonnæ gtt. iv.
Vini ipecacuanhæ gtt. xvi.
Natrii bromidi grs. xvi.
Syr. amygdalæ amar. q. s. ad. ℥ii.

M. Sig.—℥i every two to four hours, according to the severity of the paroxysms, for a child two years old.

Whenever necessary a small dose of some morphine preparation may be administered to induce rest or sleep, and where the heart is weak, a fresh infusion of digitalis will prove a grateful addition. Numerous other remedies have been found serviceable, but caution is commended in their promiscuous use. I am referring especially to the coal-tar products and the newer proprietary preparations, such as antipyrin, bromoform, pertussin and the like. Complications should be treated according to indications.

The paroxysms may frequently be controlled by pulling the lower jaw downward and forward. This manipulation is harmless and painless. Its application is contraindicated only in the presence of food in the mouth or esophagus. Intensely spasmodic attacks may be relieved by the inhalation of chloroform.

329 EAST FIFTY-FIRST STREET, N. Y.

PERTUSSIS—A NEW METHOD OF TREATMENT WITH REPORT OF CASES.*

BY

AMELIA M. FENDLER, M. D.,

New York City.

(With Illustration.)

ANYTHING that will help us with the treatment of pertussis is a valuable aid to our therapy. It has been discovered by Koplik that the disease is caused by a specific bacterial agent, a short bacillus, which finds lodgment in the upper respiratory tract, and is found in the mucus expelled at the end of a typical paroxysm in the early part of the disease before bronchitis is present.

The spasmodic attacks are reflex in character, the origin of the reflex being an irritation in the mucous membrane of the larynx. In this respect the attacks are similar to other reflex laryngeal spasms.

The medical treatment of pertussis in the hands of most practitioners is limited to the administration of antipyrin. After a conscientious trial of all the known so-called remedies, I have limited myself to an antipyrin and sodium bromide mixture, alternating in some cases with bromoform, and in all cases the giving of Dover's powder at night. This form of internal medication has been about as successful in my hands as any of these cases generally are.

CASE I.—On May 10, last year, a little girl, of eleven months was brought to me with symptoms of an ordinary cold. After three days' treatment, the cough gradually increasing in intensity, and occurring in paroxysms, a diagnosis of the catarrhal stage of pertussis was made and the usual treatment adopted. At the end of the week the child developed the "whoop" which marks the spasmodic stage. After three days, the spells increasing in number and intensity despite all treatment, at the request of Dr. Sidney Yankauer, I discontinued my medication and tried

* Read before the Women's Med. Assoc., of N. Y. C., April 15th, '08.

an injection of a 2 per cent. solution of antipyrin into the larynx with phenomenal success.

May 20, at noon, ten drops were injected. The child did not cough until 9 P. M., when she coughed heavily and had attacks of coughing and whooping until noon of the 21st, when an injection of twelve drops was given; she did not then cough until 8 P. M., after that she coughed intermittently until noon of the 22d, when fifteen drops were injected. She then did not cough until midnight when she had one spell but no further coughing until 10.15 of the next day. At noon another injection of fifteen drops was given, and the child was then injected every other day until June 1, when the cough apparently ceased. On June 8, the mother brought the child to my office, saying that for the two previous nights she had had spells of about six coughs; no whooping or vomiting, however. Twenty drops of the solution were injected, the mother was instructed that if the child coughed again she was to be brought back to the office. She did not return.

CASE II.—This child, as far as I could learn, had entered the spasmodic stage about a week before she was brought to me, August 10, 1907. The severity of the spells in this case was most marked, the child becoming almost lifeless several times in twenty-four hours. I injected from twenty to twenty-five drops of the two per cent. solution every day for thirteen days, when the cough ceased entirely.

For CASE III I am indebted to Dr. Henry Heiman, who kindly sent it to me, December 20, 1907. The child, aged six months, had been coughing for about three weeks and whooping for several days. I injected each day, increasing gradually, from ten to twenty-five drops, when at the end of the week the cough entirely ceased.

I wish to call attention to the fact that the first case was apparently cured in nine, and positively in seventeen days from the beginning of the spasmodic stage.

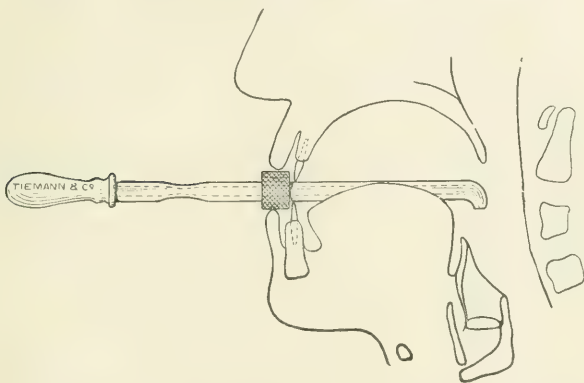
The second was cured after thirteen days of the treatment.

The third case was cured in one week.

In none of these cases did the bronchitis, which is so frequently a sequelæ of pertussis, follow, and in all the cases the child had had up to the day of the first injection, between the hours of noon and bedtime, anywhere from six to ten attacks of coughing, whooping and vomiting; and from the day the first injection was made, as the histories of these cases show, immunity was

obtained during six hours, and the mothers assured me that the spells were less in number and severity during the night and morning following.

With regard to the mode of administration, I would say, the child is placed upright on the mother's lap, the head resting upon her chest. With one hand the mother firmly secures the hands of the child, with the other she steadies the head. The operator's hands being free, the tongue is lowered with a depressor in the left hand; with the right the injection is made by means of the



glass instillation tube devised by Dr. Yankauer. The tube containing the solution is passed backward behind the uvula and the fluid quickly injected into the larynx.

Local application, as we all know, into the larynx of a child requires the skill of an expert, and even in such hands is attended with so much difficulty as to make success questionable. As a natural consequence such applications are not efficient and their use has been practically abandoned.

The laryngeal medicator (see illustration) used in the treatment of my cases, seems to make it possible for anyone to easily inject fluid into the larynx.

TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Meeting, of April 9, 1908.

GODFREY R. PISEK, M. D., *in the Chair.*

EXOPHTHALMIC GOITRE.

DR. ELI LONG presented a series of cases of exophthalmic goitre all in the same family. These cases were especially interesting because the children were born in this country, but went abroad to live for seven years in the Black Forest. When they returned to this country two years ago the eldest child's neck had become enlarged. There was nothing in the history that could be used as an etiological factor, and he presented the cases because of the diagnosis. It seemed to him that goitre usually had a different beginning and he asked the opinion of the section.

CASE I.—A girl of seventeen years who showed beautifully the enlargement of the thyroid. She had a fine tremor and a rapid heart action. Exophthalmos was not marked.

CASE II.—A sister, showed almost no symptoms except a fullness in the neck. Her pulse was 110 and the exophthalmos was not marked. She had a congenital dislocation of the sternal end of the clavicle. It seemed to him that she was in the beginning stage of what her sister showed.

CASE III.—Another sister. Her pulse was between 84 and 88 and she showed almost no symptoms.

CASE IV.—The mother of these children. She had almost as much exophthalmos as the children, but there seemed to be no enlargement of the thyroid and her pulse was slow.

DISCUSSION.

DR. JOHN ROGERS said that to explain the treatment of these cases it was necessary to have at least a working hypothesis for the physiology of the thyroid. It was possible to suppose that the thyroid secretion controlled the nutritional chemistry of every organ in the human body. When any of the organs were overtaxed the thyroid was forced to pour out an increased secretion and this caused it to undergo a physiological or compensatory hypertrophy. This increased activity in turn stimulated the heart and nervous system. Certain individuals possessed

thyroids, because of heredity or congenital conditions, that did not have as effective secretive powers as others and hence they were forced into overactivity and hypertrophy by the demands of general nutrition. He thought that these children showed this peculiarity. An antiserum, designed to check the activity of their thyroids would be therapeutically wrong. Practically, an antiserum would, in these cases, cause great prostration and would do harm rather than good. One should aim to relieve the strain upon nutrition. This could be done by quiet out-door life and by supplementing, rather than inhibiting the thyroid secretion. To do this pills of iodide of iron, one grain to a dose, should be given three times daily. Also a preparation of sheep thyroid nucleo-proteid which acted better than the commercial product made from the whole substance of the gland. He did not wish to go into details as Dr. Beebe and he expected soon to publish the details of thyroid treatment. One should distinguish between a mild form of thyroidism as in the cases presented and the wasteful, destructive overactivity of the thyroid in true exophthalmic goitre. If these children were placed under bad hygienic conditions or subjected to a severe strain upon their nutrition, their condition would soon change to that of true exophthalmic goitre. Then it would become necessary to check the overactivity of the gland. It was not always easy to distinguish between the symptoms which were physiological and those which were pathological. He thought more could be done in the early stage by helping out the gland than by surgical or antiserum treatment. He did not think the water of the Black Forest or of Switzerland had any thing to do with causing the condition, but that the trouble was more likely due to poor nutrition, bad food, bad hygiene. While antiserum was perfectly harmless in small doses he had learned that people with a dry skin did not do so well under the treatment as those with a moist warm skin. He thought that if the little girl who had so few symptoms were to run up and down the block or get insufficient sleep she would develop true exophthalmic goitre in a few days. On the other hand if she were kept in bed she would have impaired nutrition and then she would get up exophthalmic goitre. There were many cases of these goitres which were simply cysts. This cystic degeneration was one of the commonest conditions encountered.

DR. J. FINLEY BELL, of Englewood, N. J., thought that it was necessary to have these cases under observation for a certain period in order to establish a diagnosis. A form of goitre, rarely accompanied by exophthalmos was prevalent in certain sections of country, as in Central Pennsylvania. Three of his sisters had larger goitres than those presented by Dr. Long, though none of them had symptoms of exophthalmic goitre. In many instances enlargement of the thyroid was compensatory. He knew of a family where there were a large number of goitres, some of them pronounced in elderly people of both sexes.

THE DISTRIBUTION OF BACTERIA IN BOTTLED MILK AND ITS APPLICATION TO INFANT FEEDING.

DR. ALFRED F. HESS read this, the paper of the evening. He said that some months ago, in the course of an investigation of tuberculous contamination of milk, he had had occasion to centrifuge small amounts and to make smears from the surface of cream which formed in a firmer layer in the top of the tube. Although he had realized that the cream contained relatively many bacteria, he could not but be impressed with the fact that these smears showed an immense number of various organisms, including chains of streptococci. He then began to investigate more closely the distribution of bacteria in milk, in which the cream had risen by the natural force of gravity. He had obtained numerous bottles of the different brands of milk and pipetted off successive layers of cream or skim milk. The technic of counting the bacteria was that in use at the Research Laboratory of the Board of Health. The cream contained by far the greatest number of bacteria, while skim milk even in the lowest portion of the bottle, was relatively free. Cream had hitherto been regarded as a homogeneous unit, containing numerous bacteria in uniform suspension. This was not the case; in every instance the bacterial contamination was greatest in the uppermost cream becoming less and less as one approached the lean milk. This was equally true even in the milk which was poured. The first ounce contained more bacteria than the second ounce, the second more than the third, and so on. The first two ounces, however, formed a nidus for the greatest number of organisms.

In a series in which the first two ounces of cream contained 1,383,000 bacteria, the remainder of the bottle contained only 160,000 per c.c. This principle applied not only to milk of high bacterial count, but to milk coming well within the range of certified milk, in which the average count of the bottle, was less than 15,000 per c.c. Here the first two ounces contained 115,000 germs per c.c., so that when we included this portion in our formula we contaminated the remainder of our milk. In order to ascertain whether tubercle bacilli were carried upward in the milk toward the surface of the cream he prepared a homogeneous suspension of bovine tubercle bacilli with which he infected loose milk. Two to five c.c. to the quart were used. After standing twenty-four hours four guinea pigs were inoculated with specimens from cream, as well as from the skim milk and lowest ounces in the bottle. One ounce was injected intra-peritoneally, with the result, that of the pigs developing tuberculosis most had been inoculated with the upper two ounces of cream.

He also inoculated milk with larger amounts of tubercle bacilli in suspension, and then made smears from different levels. The smears demonstrated conclusively that tubercle bacilli were also carried upward by the fat globules. The statistics given for gravity cream did not apply to centrifugal cream. If milk was centrifuged rapidly, and smears made from the cream, the skim

milk and the sediment, it was found that although many bacteria were in the upper layer, the sediment was also rich in bacteria, and contained many more than previous to the separation. If the milk was centrifuged less rapidly or for a shorter period of time, a less dense layer of cream was found and the conditions approached more nearly those of gravity cream. In other words, the result depended upon the relation of the artificial centrifugal force to the natural centripetal force of gravity; if the former was very great, it drove away many of the bacteria to the sediment. Fresh cream obtained by the centrifugal method contained fewer bacteria than gravity cream. What had been said about bacteria also applied to leukocytes.

Now that we realize that the upper two ounces of a bottle of milk harbor the greatest number of bacteria, the removal of this portion naturally suggests itself. By this procedure we lose butter fat as well as bacteria. A bottle of milk which averaged about 4.2 per cent. fat, he had found to contain but 3 per cent. when the upper two ounces had been removed. This may frequently be of advantage as Holt said "there were many healthy infants who could not digest even 4 per cent. of fat at any time, and many more who during hot weather did much better when a reduction to 3 per cent. or 3.5 per cent. was made." This low-fat milk could easily be obtained by simply replacing the cap after the two ounces of cream have been removed and then shaking the bottle. This 3 per cent. milk contained fewer microorganisms than a similar milk obtained by the usual dilution of one-fourth water and was less apt to contain tubercle bacilli. That its volume was less than the watered milk might be considered an advantage, as nothing was to be gained by feeding an infant with large quantities of water. When a 4 per cent. milk was diluted one-fourth by adding eleven ounces of water, the proteid was reduced to 2.6 per cent. if we considered the average proteid content of cow's milk to be 3.5 per cent. If one used the *partially-skimmed-milk* the proteid remained in full strength. As the proteids were more often prescribed too low than too high in later infancy, this formula should prove useful. In order to bring his ideas into conformity with well established principles he had endeavored to duplicate the percentages ordinarily used. He had had various portions of bottled milk tested for fat by the Babcock method. The results were incorporated in a table from which it was seen that the upper two ounces on the bottle contained on an average of 24 per cent. fat. Then *a 12 per cent. milk was obtained by dipping off the next seven ounces, a 10 per cent. milk by dipping off 8 ounces and a 7 per cent. milk by using the next twelve ounces.* While these figures were not absolute they compared very favorably with top milk according to established methods. The same formulas might be prepared on this basis as were generally made use of in top milk preparations. If one wished to obtain a 4 per cent. milk with its normal quota of proteid one had only to add three

ounces of the 10 per cent. cream to the three per cent. milk. This method of preparing milk should be particularly serviceable during the summer when we had so much to fear from bacterial contamination as well as from digestive disturbances due to a food too rich in fat.

DISCUSSION.

DR. HENRY L. COIT, of Newark, N. J., said that systematic efforts had been made for a number of years to eliminate bacteria from milk, and he thought some advance had been made in this direction. Every effort should be made to get milk as free from germs as possible. The subject discussed by Dr. Hess had opened up a new line of thought. It was designed by nature that the calf, the kid and the infant, should not ingest the perpendicular droppings from hair, hide and stable manure. As to removing the top milk he said he could see no objection to that with its high bacterial content, since he preferred lower fat in milk in order to be able to use higher proteids. He recalled what Dr. Jacobi once said, after a discussion along these lines about the advantages of lower fat in the mixtures fed to babies. Dr. Coit confessed that, years ago, he felt that it was necessary to use top milk and superfatted mixtures, because of the prevailing opinion in those days that almost all of the trouble in artificial feeding was due to proteid indigestion. This was now clearly proven to be a mistake. There was a very important principle in infant feeding that the capacity for proteid digestion was limited and reduced by superfatted mixtures. Dr. Coit said that some years ago he had mapped out a plan for accurate percentage adjustment, but did not use such rules much of late, because they interfered with flexible thinking. Thinking in percentages was better than figuring in percentages, and this was quite possible if one knew his milk chemistry. Dr. Coit's early work in infant feeding was bound by a series of limitations caused by the writings and teachings of those whom he felt he must follow. But he had gotten away from these hindrances. The careful investigations recorded in the paper by Dr. Hess showed that if contaminated milk must be used, much good could be accomplished by removing the top milk and using the under milk. In Europe where raw milk was seldom used they got rid of the germs and toxins too, by boiling the milk. Dr. Coit said that his method of infant feeding consisted in the use of clean raw milk for well babies. For sick babies he used milk that was cleaned by low temperature sterilization as taught by Freeman. Having seen many cases of tuberculous meningitis he felt that it was unsafe to use raw milk unless the cow was tuberculinized. If tuberculosis was transmitted by raw milk, it was their duty to protect the infant against it. A very large proportion of tuberculosis in infants was surgical tuberculosis, as seen in tuberculous adenitis, tuberculous osteitis, tuberculosis of the serous cavities, and was unquestionably transmitted by the ingestion of the bacilli.

Any milk that Dr. Coit did not know, he said he felt in duty bound to clean up, therefore, he used domestic pasturization for all but certified milk. There was certified milk, sold in New York City, which contained as low as 400 bacteria per cm. Dr. Coit believed there were other things to contend with in market milk besides the bacteria. The presence of toxines was quite as offensive. Three or four weeks ago he had the opportunity of talking with the President of the American Milk Sugar Company. Milk sugar was made by a syndicate. There were forty or fifty sugar refineries controlled by this one commercial institution. He felt that a great difficulty in infant feeding was to be found in the milk sugar, which was made from whey, an end product in the manufacture of things not used for food. He had talked with the chemist of this industry, who supervised the production of the sugar, and found that his suspicions were well grounded, as they did not eliminate all the toxines. The yellow color of the milk sugar was really due to the impurities. The putrefactive bacteria found in the milk were at work upon the whey before the first crystalization. The sugar on the market was from a second crystalization, this second crystalization was necessary before the milk sugar was salable. One drug firm had asked for a third crystalization. After a third or fourth crystalization the sugar of milk would then be pure. Dr. Coit said he merely threw this out as a preliminary statement and would present important data at a future meeting. Milk sugar was contaminated and contained bacterial toxines. Difficulties were encountered from such sugar in artificial feeding.

DR. ELIAS H. BARTLEY, of Brooklyn, said that the subject of bacterial contamination of this food in infant feeding, was by no means new, but had furnished food for thought for a long time. It was a well known fact that cream contained more bacteria than the original milk, and it was very interesting to figure out in this way the distribution of bacteria in the milk, and what Dr. Hess had presented was an ingenious suggestion for getting rid of the bacteria. Several years ago the Milk Commission of Brooklyn, had brought to their notice the fact that there were six babies partaking of certified milk, who had trouble with their digestion, showing itself in green slimy stools and colic.

He went to the laboratory to learn a possible cause and the chemist of that commission said to him, "I think I shall have to stop the use of this certified milk, for my boy is not getting along well on it." Dr. Bartley then found that the milk was contaminated, from 20,000 up to 150,000 bacteria, and for some unaccountable reason; so soon as this contamination was corrected, the children were all right again. He had noticed the same thing once since then, and he believed it simply was a question of numbers that produced the disturbance. If one could reduce the number of bacteria by some simple device this would have a great influence in keeping the babies in a healthy state. But a difference between 96,000 and 235,000, while it might seem to

be considerable, was not so enormous. Take for example table No. 3, there were 24,000 in the upper two ounces, and in the upper three ounces there were 108,000, this apparently, was very irregular. The question arose in his mind whether a reduction in the number of bacteria contained in the milk would make a great difference; and this suggested another line of thought, *i.e.*, whether the conclusion that they were all reaching, that a high fat content was essentially injurious was correct; or whether, perhaps, a high bacterial count in the top milks was not really the cause of part of the trouble. Years ago he learned that commercial cream could not be depended upon. When he was investigating ice cream poisoning he found that cream was held back sometimes for weeks or months before being sent to market. A few years ago, he came across a dairyman, who had 90,000 forty-quart cans of cream in cold storage. Four of these cans came from Philadelphia and the contents were thick and sour. This showed that even in cold storage the bacteria would multiply. He knew that the first four or six ounces from the top of the bottle of milk, when diluted often gave fermentative troubles. He used the one-half of the bottle; *i.e.*, instead of the six, eight or ten ounces from the top he preferred to use the upper sixteen ounces, and thus obtained more proteid than he formerly used.

DR. JOSEPH E. WINTERS said I have been feeding babies in precisely the same way for more than a score of years, namely, beginning with the top one-half ounce or one ounce from a quart bottle of milk. The results had been eminently satisfactory. The reason for this mode of feeding was that when the food was prepared for the feeding bottle, and after standing, it presented the same appearance as breast milk when it had been allowed to stand in the test tube. On chemical examination it was found to be practically identical with breast milk, namely, four to six or seven per cent. fat, one per cent. proteid. When acidulated it presented the same physical behavior as woman's milk. It presented the same light, feathery, flocculent curd as woman's milk. This physical behavior of the artificial food was rendered a necessity by the anatomical peculiarities of the pylorus in a young infant; this was so narrow that it only admitted the passage of a probe and was surrounded by a protuberant, firm, muscular ring.

A baby on this mixture would be found to thrive in precisely the same manner and degree as a breast fed baby did when fed at the breast of a vigorous, healthy, young woman. When a breast fed baby was doing badly, was pale, anæmic, flabby, emaciated, it would be found that the breast milk was deficient in fat. If this baby was removed from the breast and placed on an artificial mixture prepared as indicated it would immediately thrive. Such experiences led him to feel that there was a possibility of error that had crept into these tables as pointed out by Dr. Bartley. His experience was against the literal acceptance of these tables. Dr. Winters believed there was much exaggeration

tion as to the conveyance of tuberculosis through milk. He believed there was much exaggeration in the contamination of milk which was sold in New York City. The great watchfulness of the excellent Board of Health, of this City, made the sale of contaminated milk practically impossible.

DR. HENRY DWIGHT CHAPIN said that the work Dr. Hess was doing was very interesting and valuable under certain conditions. They had known in a general way that cream harbored more bacteria, and this information came largely through the work of Dr. Freeman, but they did not know, how accurately they were localized in the various layers, as Dr. Hess had shown. He thought, however, that in practical infant feeding, his own method was good, which was not to take only the cream, but a certain proportion of the cream and skimmed milk, such a mixture would so dilute the bacteria that as a general rule they would occur in such small numbers as not to do harm; this could even be done with the commercial milk if one was careful. However, in hot weather, it was well to remember that the top two ounces of the bottle, were the dangerous two ounces, so far as the bacteria were concerned. He asked Dr. Hess whether his percentages of proteid were by actual assays, because he had found in the assays he had made that the proteid content did not run quite so high.

DR. HESS replied, that what he had given was taken from the literature, including Dr. Chapin's own work.

DR. CHAPIN said, that he had had actual assays made and had found the proteid to be a little under that assumed to exist. Many of the older books told them that they should use cream in order to get the right percentages of fat, but this had never appealed to him because cream was so inconsistent and usually older than the milk, and had large quantities of bacteria. They knew very little about the actual percentages of cream. Not to state the age of the cream was bad. But the work of Dr. Hess would not at all interfere with the percentage ratio of topmilks. He could not agree with Dr. Coit when he cast a slur on percentages although he believed that it had been carried to excess. The baby's stomach would inform them whether the percentage was right or wrong by retaining or rejecting the food. It was astonishing, that in every recent discussion on infant feeding, there was always advocated either high fat or high proteid, they could not seem to get away from it. Dr. Chapin said he took the middle ground. The pendulum he thought had swung too far toward high proteids, ignoring more or less the fats. He could not believe that whole milk was good for babies. Those to whom he had given whole milk had not done well. He said he was specially chary in regard to accepting the conclusions drawn from the work of some workers abroad, because conditions were very different in Europe. In France they had no means of properly preserving the milk, because they had so little ice.

DR. ROLAND G. FREEMAN had been very much interested

in the work done by Dr. Hess because he himself had worked on the same problem for several years but had published only a preliminary report. Having been asked by a representative of the Bureau of Animal Industry, of the Department of Agriculture, to examine the butter and skim from a new butter machine which they were testing, he found that the bacteria of the milk were, for the most part, in the butter. He then examined gravity cream and the milk from which it had risen and found again in repeated experiments that some 95 per cent. of the bacteria were always above the cream line. While his experiments agreed with those of Dr. Hess in that, there were more bacteria in the upper layers of cream than in the lower, he had found much greater increase in bacterial contamination to take place at the cream line, there being very many bacteria just above the cream line, and very few below. His results also agreed with Dr. Hess's in that while most centrifuged milk also showed this separation of bacteria with the cream, that this was not always true. In laboratory centrifugation the bacteria were always in the cream but in some milk passed through a commercial separator no more bacteria were shown in the cream than in the skim.

In further experiments with artificial emulsion he seemed to get some positive results although there was not sufficient work done along this line to prove convincing.

His suggestion with regard to the practical application of these facts differed from those of Dr. Hess. Dr. Hess recommended discarding the top two ounces of cream, while Dr. Freeman suggested the use of the skim milk raw and the pasteurizing of only the rest.

DR. CHARLES G. KERLEY said that the work Dr. Hess was doing was to him very interesting, particularly because it represented original work on a very old subject, milk. They had had a great deal of theory presented to them and it was very gratifying to have something given them which represented carefully work out ideas. He believed that the work of Dr. Hess would be generally appreciated.

As to the matter of the application of percentage feeding in infants, he thought they had a pattern laid out for them, *i.e.*, mother's milk. If well babies were to be fed satisfactorily they must respect the nutritional elements in the milk as placed there by nature; therefore, they must use percentage feeding. In a discussion on infant feeding there were two points always to be considered, first, well children and, second, sick children. Tonight they were discussing the well children and, whereas with sick babies that was another proposition. With sick babies he had found that what theories were advanced in regard to feeding them were not worth a continental. They should try more to individualize in feeding sick babies; there should be more flexibility in feeding them. There was no one system of feeding that would apply in every case. Dr. Kerley said he had fed his babies successfully, but he tried to find out what applied in each particular case.

DR. J. FINLEY BELL, of Englewood, N. J., said, that the first suggestion in the survey of the tables was that it required the same time to grow the bacteria in the top as in the lower layers of the milk. If the milk was from twenty-four to forty-eight hours old there would probably be a considerable number of bacteria in all the layers of the milk, and some would grow after the cream had been raised. They all knew that milk could be drawn from the animal and before growing cold placed in a separator, and cream of various percentages occurred. In other words, he asked if it would not be better to secure the cream of various percentages before the bacteria had time to grow and be shipped as cream. Separator cream had been condemned because of destruction of the emulsion, but he submitted that milk from other than Jersey or Guernsey cows would give a cream not given to this fault. The number of bacteria, 14,700 (as shown in one of the tables,) was present after the milk had been drawn twenty-four hours. The milk did not contain that number shortly after the milking. There must have been an incidental contamination, which would have been obviated to a great extent by the separator methods. It seemed to him that they were up against two propositions, to either sacrifice the fats and accept the bacteria, or to sacrifice the bacteria and take a low fat mixture. He thought it wiser to sacrifice the bacteria and to accept low fat mixture. In regard to the fat question, it seemed to him that the trouble was not one of total fats but a question of the chemistry of the fat. If one took the milk from a Guernsey or Jersey cow there would be a large percentage of stearin and a relatively small percentage of olein. This formed much larger globules because the fat was much denser, and on this account would carry the bacteria to the uppermost layers of the cream more rapidly. It was rather interesting to note that the relative proportion of stearin and olein corresponded closely to the melting point of the fat, and the rapidity of the cream rise in the milk, and also corresponded to the fineness of the emulsion. The fat containing a large amount of stearin did not emulsify finely. It had been proven by physiologists that fat in fine emulsion was digested more rapidly than the fat in a coarser emulsion. It was the character of the fat in many cases that hindered the digestion of the proteids. This occurred in two ways: First, by coating the stomach with an insoluble fat which melted at a temperature higher than the child's; therefore, the function of the glands in the stomach was interfered with. Secondly, the curdling of the milk in the stomach mostly by organic acids, generated by reason of absence of hydrochloric acid in the gastric juice were coated over with this insoluble fat and so carried into the duodenum. The pancreatic ferments not being developed in the young infant, these curds were carried down into the intestine, where the fat underwent a splitting into irritant fatty acids, with putrefaction of the proteids.

He asked Dr. Hess if he had made any observation in reference

to the growth of yeasts and moulds in the milk. During a series of examinations in the measurements of fat globules in milk from various animals some two or three years ago, it was demonstrated that yeasts and moulds grew in the top, but not in the lower layers.

DR. ALFRED F. HESS closed the discussion. He said the mode of infant feeding that he had presented had advantages which other methods of top milk feeding did not possess. The first two ounces of milk were greatly contaminated.

With regard to Dr. Coit's statement about always boiling the milk when he could not get certified milk, Dr. Hess thought he would get better results if he first took off two ounces and then boiled the milk. Otherwise, he would be boiling millions of bacteria, including perhaps tubercle bacilli, and feeding the baby with them. Even if they wished to use milk that had been boiled, he thought it best to remove the first two ounces and then boil it.

As to the question of 11,000 or 10,000 or 8,000 this could not be calculated exactly. The dilutions were made from 1 to 1,000. In one case there were eighteen colonies, while in another there was one colony. This might be due to a mistake in the dilutions.

With regard to Dr. Bell's statement about sacrificing the bacteria or the fats, he did not think it was necessary to sacrifice the fats. If they took off two ounces, they still could have a milk with three per cent. fat. They could use top milk proportions.

With regard to yeasts and moulds, he had had no experience with them. He had not been troubled with moulds at all. He had not noticed that there were more on the cream than on the milk.

BRIEF OF CURRENT LITERATURE.

Congenital Hypertrophic Pyloric Stenosis, and its Medical Treatment.—George Carpenter (*Lancet*, March 14, 1908) does not feel satisfied with the diagnosis of congenital hypertrophic pyloric stenosis unless the tumor can be felt. Cases with classical symptoms of this condition have succumbed, and yet post-mortem the pylorus has been found normal. In palpating for the tumor, this is apt to recede from the examining fingers and be overlooked. The writer advises grasping the abdominal wall and underlying parts with the fingers and thumb from right to left and *vice versa*. This maneuver may not only disclose the presence of the tumor, but also permit an estimate of its size and shape. Hopeless in regard to medical treatment as the typical hypertrophied pylorus appears to be in the post-mortem room—the tightly-shut orifice, the thick, gristle-like walls, the cervix and os uteri-like appearance on its duodenal aspect, its capacity

securely to hold a dilated stomachful of water—the writer does not think this after-death state denotes its natural condition during life. He thinks that tight post-mortem contraction of the hypertrophied circular muscular fibres occludes the pylorus, and this prevents the exit of water when tested in the usual way. There are two hypotheses as to the causation of congenital hypertrophic stenosis of the pylorus, viz.: (1) that this condition is a muscle hypertrophy not only of the pylorus but of the rest of the stomach, and that it is secondary to a functional disturbance; and (2) that it is a primary malformation or newgrowth. The author favors the congenital hypothesis for these reasons: (1) the condition has been found in the fetus; (2) symptoms frequently arise immediately after birth in cases where it is known to exist; and (3) the associated muscle hypertrophy of the stomach is not a general hypertrophy of the organ, or if it be a general hypertrophy of the viscus the part near the pylorus, to the extent of a quarter or one-third of the pyloric end, is immensely thicker in comparison. The stomach being a hollow viscus, hypertrophy would be general rather than partial if that hypertrophy were due to increased work, as it is, as a general rule, in the bladder with a large prostate. The causes of the pyloric obstruction are probably as complex and multifarious as those of gastric disturbances in the dyspeptic infant. The records of the surgical treatment of this complaint show that the infant does not readily tolerate plastic operations on the abdominal viscera, even at the most skillful and the most expeditious hands. It must, therefore, he looked upon as a last resort. Muscular and nervous hyperexcitability may be fought with antispasmodics, but the writer has little faith in them. The secret of treatment lies in proper feeding with clean, suitably diluted milk, avoiding excessive quantities, irregular hours and hasty feeding. Abdominal massage in the direction of the pylorus and lavage twice a day with normal saline solution are of value. The stomach must be kept warm and not be upset by starchy foods.

Pathogeny of Certain Epidemics of Gastroenteritis.—Decheri (*Ann. de Mèd et Chir. Inf.*, March 1, 1908) calls attention to the use of fermented or fermentible materials, such as are obtained from distilleries or beet-sugar factories and called pulp, in feeding of milk cattle. Apart from the chemical qualities of such milk, there are biological qualities which render it unfit for feeding infants. Toxins are developed in the milk which cause autointoxication in infants. The best treatment of such infants is by the water diet, which generally brings about a rapid cure unless the intoxication has become too severe before the treatment is instituted.

Treatment of Summer Diarrhea in Children.—This is given briefly by F. H. Cole (*Intercol. Med. Jour.*, Jan. 20, 1908) as follows: (1) *Hydrotherapy*.—Lukewarm baths and spongings are

invaluable and necessary. *Gastric* lavage at the commencement of these cases is the best treatment. It has rarely to be done a second time. *Rectal* and *colonic* lavage is of especial value where the condition is largely one of colitis. It is somewhat difficult to do thoroughly if much tenesmus be present. If successful, however, it lessens the tenesmus, removes irritant and toxic substances, and it stimulates the small intestine to evacuate its contents. It likewise stimulates the excretory action of the kidneys, and has, as a rule, a soothing effect on the nervous system. It may be repeated once or even twice daily for two, three, or four days. (2) *Drugs*.—The treatment by drugs in the early stages must be eliminative, castor oil, $\bar{5}j$ to $\bar{5}ij$, in the non-vomiting cases, followed by 8 to 10-minim doses in emulsion. Calomel is best (if vomiting) in frequent small doses, till 2 grains have been given. Small doses of sodium or magnesium sulphate are very useful if there is no collapse or absorption of much tissue fluid, to keep the intestinal canal clear. The mixture of rhubarb and soda is efficient, but nauseous. Opium—to combat the constant, forcibly-expelled, watery evacuations of colitis—is of great service, especially if there is much tenesmus. It may be given with castor oil in emulsion. Bismuth is frequently productive of great harm, particularly when the temperature is high and the motions are foul. A little later, given in 10-gr. doses every three hours to a child one year old, it may do great good by checking vomiting; but if not effective after six or eight doses, it should be discontinued. Acid mixtures with astringents are helpful only in the later stages of a few cases. They are best given with opium. The writer has little use for the antiseptics—salol, resorcin, naphthol, carbolic acid—but says bichloride of mercury is good, and may be added to the emulsion of castor oil. Alcohol in acute gastro-enteric conditions is to be avoided. It is irritant in both stomach and kidneys. In extreme conditions, where heart stimulants are called for, strychnine and nitroglycerin are valuable, while applied heat, nasal feeding, and the subcutaneous injection of fresh sterile saline solution are of the first importance. The author emphasizes the importance of not returning too quickly to a milk diet. When milk is resumed it should preferably be either pasteurized or sterilized, diluted and modified.

Intussusception.—D. C. L. Fitzwilliams (*Lancet*, Mar. 7, 1908) discusses the etiology of this condition. He says that the seasonal influence of the disease is marked. A curve made from 453 cases not older than one year, according to the months of the year in which the intussusceptions occurred, shows a fall during the first two months and then a sudden rise in March, in which month the numbers reached their maximum; from April to September the fall is gradual and persistent, October and November each show a slight rise, while during December the curve shows that the figures nearly double those of the previous month and almost equal those of March. The relation of age to the inci-

dence of the disease is remarkable and constant. In 648 cases under the age of 12 years 466, or 71.9 per cent., occurred in children who were not more than 12 months old; 143, or 20.5 per cent., between the ages of 1 and 6 years. The period between the fourth and the seventh months of life inclusive is the time at which intussusception is most likely to occur; of the 466 cases under one year no less than 64 per cent. fell within this period of four months. This monthly variation is due directly to the ignorance on the part of those who are responsible for feeding the child. The appearance of teeth at about the sixth month is often taken by parents as an indication of ability to assimilate a more varied diet. In 788 cases of all ages in which the sex was noted, 536, or 68 per cent., were males. The writer thinks that the sex incidence favors a dietetic origin of the affection, male children, the larger and stronger, being given more food than females. Intussusceptions occur almost always in fat, well-developed, healthy children. The author is convinced that if the mothers were really carefully questioned many would give a history of the child having had some unusual substance by the mouth, such as some indigestible form of food, an altered diet, or some purgative. The age incidence, the effect of the seasons and, to a lesser extent, the disproportion between the sexes, all seem to point to a dietetic rather than to an anatomical causation of the disease. The writer has watched the formation of nodes in the intestine spontaneously and under electric stimulation. He thinks these are very suggestive of the manner in which an invagination begins. A local constriction becoming overlapped by the dilated bowel below to such an extent that it can be grasped by the latter is all that is needed to initiate an intussusception. There seems to be a very fine line between the limits of physiological and pathological movement in the commencement of intussusception; and the governing mechanism is so delicately balanced that there are times when the least thing, such as an undigested crust or a grain of gray powder, may be sufficient to turn a hitherto physiological process into a pathological condition fraught with the gravest danger to life.

Treatment of Intussusception.—E. A. Codman (*Bost. Med. and Surg. Jour.*, April 2, 1908) advises that in irreducible cases in which the small intestine is invaginated into the large, simple enterostomy without resection and resection of the mass should be abandoned and replaced by ligation of the impacted mesentery and enterostomy. In infants where there is already evidence of severe exhaustion, ligation and enterostomy could probably be done very rapidly and with less operative shock than even a successful reduction, provided the operator from the beginning abandoned any idea of reduction. The essential object of the operation suggested is to produce gangrene of the intussusceptum in a convenient manner so that within a few days enough softening of the constricted portion will have taken place to allow of its ready reduction by gentle traction. When the arterial

supply is cut off it cannot be long before the blood and edema in the intussusceptum will be squeezed out by the peristalsis of the intussusciens, leaving the submucosa still strong enough to stand a gentle pull. The suggestion it offered, particularly for desperate cases to replace resection and hopeless effort at reduction. The operation suggested is a modification of one by W. B. Conant. Its chief features are : (1) Division of the small intestine between clamps just above the mass. (2) Clamping the right band of mesentery as close to the mass as possible. (3) Tying mesentery on proximal side of clamp in bundles as large as safety permits and dividing bundles between tie and clamp after the application of each tie. This process is to be continued until the blood-supply of the outer coat is reached. (4) Mixer enterostomy tube tied into proximal end of intestine and another into distal end. Both tubes connected with rubber tubing and allowed to drain over side of table. (5) If practicable the clamp may be removed from the distal portion of the mesentery so as to allow the venous blood to drain out and thus diminish the size of the intussusceptum. (6) Packing the wound so that the ends of the intestines may be readily manipulated, leaving ends of bowel long enough for subsequent anastomosis. (7) When drainage from the intussusceptum through its lumen or its veins has sufficiently diminished its size, it may be drawn out of the intussusciens by gentle traction. This occurs immediately or within a few days. (8) When sloughed intestine is drawn out, if the patient's condition permits an immediate anastomosis may be considered. If not, the tubes can be tied in again.

Indigestion in Children.—G. F. Still (*Med. Press*, Mar. 4, 1908) mentions, as the chief symptoms of indigestion in children, wasting, loss of appetite, sometimes pain in the abdomen, often associated with mucus in the stools, nervousness, inability to sleep well, sudden attacks of pallor, constant fatigue, darkness around the eyes, abdominal enlargement, sometimes nausea, vomiting and rise of temperature, pale stools, offensive breath, dyspnea, lichen urticatus, and dryness of the hair. Among its common causes are improper diet, hasty eating, often encouraged by nurses or mothers, eating immediately after being awakened. Some children have idiosyncrasies and will vomit certain articles of food even when disguised. The indigestion of childhood is generally a carbohydrate dyspepsia, so bread and butter are often the offending foods. Brown bread and cereals also are irritating on account of the coarse residue which they leave in the intestine. If toast is given it should be brittle, not soggy. Potato is a common cause of trouble, and should be well mashed if employed at all. Tea is unsuitable for a child with weak digestion and should always be very weak if given to any children. Indigestion is often brought on by forcing the ingestion of too large quantities of milk. Many children lose weight simply from indigestion. These cases are harmed rather than aided

by cod-liver oil. Treatment of indigestion must include the cure of the commonly associated habitual constipation.

Carbohydrate Incapacity in Infants and Young Children.—C. G. Kerley (*Arch. of Ped.*, Mar., 1908) says that the most usual manifestation of sugar excess or incapacity is regurgitation between feedings, especially if cane sugar is used. Either fat or sugar may cause such regurgitation, but sugar is the more prominent agent, and as fat is the more valuable nutritional factor, sugar should be reduced as the first step. Both the sugar capacity and fat capacity may be increased by the use of considerable quantities of lime water. Maltose incapacity is evidenced by regurgitation and vomiting and through its laxative properties. The stools of starch-fed children present practically the same gross appearance whether they contain free starch or not. The iodine test is the only means of determining whether it has been digested. If starch is not digested it does little harm, its chief drawback being the production of constipation at times. The cane-sugar capacity of older children varies greatly. Some will take four to eight ounces a day without inconvenience; in others a few grains will cause disturbance, most often a persistent hyperemia of the mucous membrane of the upper respiratory tract. The writer mentions recurrent rhinitis, tonsillitis and bronchitis, eczema, frequent urticaria, rheumatism and recurrent vomiting as signs of sugar incapacity.

Infant Feeding.—Self-evident as some of the following conclusions of James Burnet (*Practitioner*, April, 1908) are, they are of such importance in these days of enthusiasm over pasteurized and sterilized milk that they bear repetition.

Every infant should be breast-fed unless the mother is unable to nurse, or is suffering from some condition which renders it inadvisable that she should do so. As a substitute for breast milk cow's milk brought just to the boiling point is to be preferred to sterilized or other forms of "treated" milk. Gain in weight should not be looked upon as the chief criterion of the infant's progress. Artificial foods should never be used before the tenth month; and even then they should not be regarded as essential. In places where infant milk depots are a necessity only medical men should be placed in charge. The physician of such a depot must see to it that no milk is supplied to women who are able to nurse their offspring.

Case of Fat-free Milk in Infant Feeding.—Since a number of recent writers have come to the conclusion that in digestive disturbances of infants the fats and not the proteids are the chief offenders. Charles W. Townsend (*Bost. Med. and Surg. Jour.*, March 19, 1908) has fed nearly all the babies suffering from gastrointestinal troubles during his service in the Boston Floating Hospital beginning last August, with fat-free milk. The fifty infants were being fed on various modifications of milk, milk and barley water, split proteids, butter-milk and condensed milk. The diet of these was changed more or less gradually to fat-free

milk and barley water. New cases, entering with the usual symptoms of diarrhea with curdy and mucous stools, with or without vomiting, and with or without a septic temperature, were given calomel or castor oil to clear them out, and were put on barley water and fat-free milk. In about one-third of the cases the proportion of fat-free milk to barley water was one in ten at the outset, and the strength was increased daily. The remaining two-thirds of the cases were begun at once on equal parts of barley water and fat-free milk, or on fat-free milk alone without any diluent. Eighty-five cases in all were treated. It was found that undiluted fat-free milk was well digested even by very young infants, so that during the latter part of the service, instead of cautiously giving them much diluted fat-free milk, they were placed at once on whole fat-free milk. The stools of infants fed on fat-free milk are yellowish-brown, smooth and free from lumps or curds, and with little odor. The writer says that the probable explanation for the curds that were found in the stools of these infants while they were taking a food containing fat, and their absence when they were taking a food free from fat, although high in proteids, seems to be that the curds are due to fat and not to proteids. Milk that is practically fat-free can be obtained only by the centrifugal process. This contains less than one-half of one per cent. of fat. In private practice, where this is not so easily procured, milk may be used from which all the cream has been removed by means of the Chapin dipper or by the siphon. The writer concludes that while fat is very necessary to the normal infant, it is more often given in excess than is generally supposed. Excess of fat may cause one or more of a number of symptoms, as, for example, constipation, white and "curdy" stools, a ravenous appetite with atrophy, convulsions. In gastro-intestinal disturbances it is desirable to exclude fat. The proteids of undiluted fat-free milk appear to be remarkably well borne even by young infants, and there is an absence of so-called curds from the stools.

Indications for Water in Childhood.—Max Barbour (*N. Y. Med. Jour.*, Feb. 8, 1908) prefaces his remarks with the statement that the body consists of almost 70 per cent. of water. An insufficiency of water will dry up the glandular secretions, arresting their activity and thus inhibiting digestive and other functions; will inspissate the blood and lessen its quantity, thereby interfering with the circulation and perhaps leading to thrombosis; and will diminish the excretion of urine, resulting in the retention of degenerative tissue products. A child cannot ask for water nor does it clearly understand the pangs of thirst, yet a child is said to require, proportionately to its weight, six to eight times as much water as an adult. According to Holt the food of all young animals should contain from 80 to 90 per cent. of water. This is really needed to dissolve certain ingredients of the food, such as sugar and salts; to keep others in suspension, such as proteids; and to emulsify fats. It is

also necessary on account of the child's peculiar digestive power, as the child secretes little pepsin and this is most fully utilized in the presence of abundant water. Vomiting of children after nursing is often allayed by giving a few teaspoonfuls of water. A glass of water during the twenty-four hours is not too much for a child. This amount should vary according to reason and to certain physical conditions of the child. The morbid states in which water is particularly indicated are: those with pyrexia, gastro-intestinal disorders due to overfeeding, particularly summer diarrhea, general inanition, irritability of the bladder due to acid or concentrated urine, laryngitis and bronchitis. Water is contraindicated in few cases in children; such as edema or pleuritic effusion, and cases of high arterial tension with congestion or inflammation in certain organs, such as the brain or lung.

Hysteria in Children.—G. E. Price (*Arch. of Ped.*, Feb., 1908) calls attention to the frequent occurrence of hysteria during childhood. The symptoms are modified slightly from those in the adult. Of sensory symptoms are observed pain, and all grades of increased and diminished, or even abolished, sensation. Anesthesia is a more infrequent symptom in the hysteria of childhood than is hyperesthesia, but under this head have been reported cases of hysterical blindness, hemianopsia and deafness. Motor disturbances that may occur are paralyses, contractures, tremors, convulsions, and a peculiar disturbance of coordination—astasia-abasia. Of these, convulsions are the most frequent manifestation of hysteria in childhood, and tremors the least frequent. Among visceral and vasomotor phenomena may be enumerated vomiting, tympanites, disturbances of respiration and of temperature. Psychic symptoms are impairment of memory and will power (amnesia and aboulia), and the most characteristic impressionability or readiness of reaction to suggestion. In children we must depend for a diagnosis upon the history of the development and course of the symptoms, the absence of an adequate cause for the condition simulated, the absence of symptoms pointing to a true organic lesion, and the presence of the so-called "hysterical stigmata." As there is no reason why a person afflicted with a true organic disease of the nervous system could not also at the same time have hysteria, it must be remembered that the presence of hysterical stigmata in a given case does not rule out the possibility of a more serious condition being present. The prognosis of hysteria is much more favorable in children than in the adult. Suggestion is most important for removing symptoms, but we should employ good hygienic measures, simple diet, and isolation when necessary, remembering that the majority of parents err in the direction of excessive sympathy or punishment. If the child is poorly nourished and under weight, rest methods and forced feeding are of value. If anemia is present, iron may be given. Bromides are often of distinct value, particularly when the

psychic symptoms predominate. When hysterical symptoms develop in a girl at the age of puberty, before menstruation has been established, emmenagogues may be tried. Hypnotism as a therapeutic measure is mentioned only to be condemned. The writer records cases of hysterical tremor, hysterical joint, psychic disturbance and hysterical dyspnea.

Treatment of Some Acute Pulmonary Affections of Infancy.—Deléarde (*Rev. Fran. de Méd. et de Chir.*, Feb. 10, 1908) recommends revulsion as the best treatment for bronchopneumonia and capillary bronchitis in young children. He allows them to sit up in bed so as to lessen the danger of passive congestion of the lungs from the horizontal position. The revulsion is produced by sinapisms or by hydrotherapeutic applications. The sinapisms and hot applications are reserved for those cases in which the extent of the lung lesion, rather than the severity of the infection, is the cause of a bad prognosis. In the cases in which deep infection, and intoxication are evidenced by heart weakness and general bad condition, cold will be of more value, applied either by cold baths or cold packs. The effect will be to increase the strength of the pulse, improve the general condition, lessen tension of the pulse and increase diuresis. When the lung lesion in its extent is the dreaded symptom mustard applied by envelopment is very useful. A rather thin mustard paste is made and a napkin is wrung out in it, and is wrapped about the patient's body so as to cover the chest both back and front. This is covered with flannel and the child kept warm and still for fifteen minutes. He is then unwrapped and sponged with hot water in the bath to remove the loose mustard, and is dressed and put to bed. He generally will sleep for several hours after the application which will redden the skin for several hours. The application of sinapisms may be made twice in twenty-four hours, the bath four times. It should be repeated every day until the temperature has fallen and the principal symptoms may improved. The other method of revulsion proposed by the author, and one that is little used so far, is the fixation abscess. It is made by injecting turpentine under the skin over the point of the lesion. An aseptic abscess is produced which soon heals and acts as an efficient counterirritant. It is to be used only in severe cases.

Blood-pressure in Children.—Study of the blood-pressure in sickness and health in childhood has shown W. L. Stowell (*Arch. of Ped.*, Feb., 1908) that in very young children it is low in proportion to the age of the child. Its rise and fall are quickly influenced by emotions, as in adults. Diseases of the nervous system give high pressure. Acute diseases with high temperature may give either high or low pressure. Sclerosis of arteries is almost unknown in childhood, so that the use of a sphygmomanometer for its detection is needless. Blood-pressure readings are of interest physiologically, but have little clinical value in childhood.

Pneumohydrothorax in a Boy of Two Years.—Because of its rarity in children this case is fully recorded by F. Huber (*Arch. of Ped.*, Feb., 1908). The patient was said to have had measles when a year old, followed by pneumonia and a second attack one month later lasting twelve days. Two weeks before admission he had a sudden rise of temperature, vomiting, and constipation, being ill four days. Six days before admission he had fever, vomiting, cough with yellowish sputum, dyspnea, prostration and offensive green stools. The physical signs were those of a left hydro-pneumothorax with heart displaced toward the right. Gradual spontaneous recovery took place, the convalescence being interrupted by measles. Two months after admission a radiograph showed a slight shadow over the left base due to thickening and enlarged bronchial lymph nodes; general condition good. No bacteriological examination of the pleural fluid and no tuberculin test were made.

Breath Sounds Over Pleural Effusions in Children.—C. J. R. Clemens (*Pediatrics*, Feb., 1908) explains the presence of breath sounds over fluid in the pleural cavity of a child as being due to the elasticity of the chest wall which yields and so prevents the fluid from compressing the underlying lung. In large effusions the accommodative power of the chest wall has reached its limit and, as in the adult, the lung is compressed by the fluid, and breath sounds are absent.

Croup and Morphine.—A. Lesage and Maurice Cléret (*La Tribune Med.*, April 11, 1908) advocate the use of morphine in diphtheritic laryngitis whenever there are symptoms of obstruction. This obstruction is accompanied by crises of spasm which may prove fatal before antitoxin can relieve the condition. The authors believe that the reputation for poisonous symptoms in the use of opium in infants and young children is due to the other alkaloids contained and not to the morphin. Morphin is very well borne by the infant. When the authors meet with a case of laryngeal stenosis of diphtheritic origin they give as a routine treatment in injection of one-fourth to one-half cubic centimetre of a 1 per cent. solution of morphin. At the same time they inject eighty to one hundred and twenty cubic centimetres of the serum of Roux. The child sleeps quietly without spasm for five or six hours and then awakes practically cured. When intubation is necessary the length of the time that the tube must remain in place is shortened, and a reintubation is avoided. Thus we have fewer lesions of the larynx and less severe ones. At the same time the sleep that the infant obtains puts him in the best possible position to resist the severity of the poisoning.

Globular Resistance of the New-born with Reference to its Relations with Idiopathic Icterus.—E. Leuret (*Gaz. Hebd. des Sci. Med.*, March 29, 1908) has made a study of the conditions of globular resistance in the normal and the icteric newborn. He finds that in the preicteric state there is a decreased globular resistance which is only transitory and ceases when icterus is

established. Such infants generally show a subnormal temperature. In the normal infant the condition of hemolysis seems to be physiological, while in the icteric infant there is an exaggerated destruction of the old blood-corpuscles, perhaps caused by too rapid cooling of the infant's body. The uterine formed globules are not fitted for the conditions of extrauterine life and they are destroyed, while the new-formed cells are better fitted for such life and they survive the hemolysis.

Chronic Fibrous Myocarditis in Progressive Muscular Dystrophy.—C. H. Bunting (*Amer. Jour. Med. Sci.*, Feb., 1908) records the autopsy findings in a typical case of muscular dystrophy of ten years' duration in a boy in his sixteenth year, with atrophy of the shoulder girdle and upper arm muscles, of the thigh muscles, and with apparent hypertrophy of the calves, and from the history probably no facial involvement. The lesion of particular interest was that in the heart muscle. The similarity of the picture offered by the muscle of the left ventricle to that of the striated muscle was striking. There were degeneration, atrophy, and hypertrophy of fibres, and also a numerical atrophy, the fibres being replaced by scar tissue. The cell-poor and fibrous condition of this connective tissue and the absence of lymphoid infiltration seemed to give strong evidence that the process was not a recent one, but instead quite remote in point of time. There was in the postmortem findings no indication of a cause for the lesion. The patches of myocardial atrophy were scattered throughout the thickness of the heart. In the muscular wall of the stomach were lesions similar in character to those in the striated muscle although much less extensive. In the wall of the aorta, also, the longitudinal fibres of the intima especially showed vacuolation and signs of degeneration, and the fibers of the media appeared less numerous than is normal for the age of the patient. There appeared also to be an increase in connective tissue in the media as well as a thickening of the intima. While those cases of progressive muscular dystrophy in which the heart has been thoroughly examined and shown to be the seat of chronic myocardial lesions are few in number, they seem sufficient to confirm the conclusion that, in the case here cited, the heart lesion was the result of the same cause as the lesion in the voluntary muscles, and thus a part of the disease.

Neurasthenia in the Young.—R. N. Willson (*Amer. Jour. Med. Sci.*, Feb., 1908) directs attention to the fact that, at least in the young, every instance of so-called neurasthenia is in the beginning the result of some definite, preventable, and discoverable cause, which if removed in time will admit of a cure of the patient. He says that if normal conditions and health can be regained by the employment of active hygiene administered against the patient's desire and by muscular force when necessary, it would seem fair to conclude that neurasthenia is a misnomer and "hygiene hunger" the proper term. Nerve exhaustion, trauma, sexual excess, autointoxication, malaria, chlorosis, or over-exertion of

mind or body during rapid growth and development may underlie and cause the symptom complex denominated neurasthenia. Rest one, exercise another to the limit, feed those who need food, and starve the over-greedy; in every case provide a change of daily regime, overdose with clean water and clean air inside and out.

Treatment of Diphtheria by Massive Injections of Antidiphtheritic Serum.—Delearde, Minet and Bricourt (*Rev. Fran. de Med. et de Chir'*, Feb. 25, 1908) give the conclusions drawn by them as the best treatment of diphtheria as a result of the treatment of children at the Hospital Saint-Sauveur at Lille. In every suspected case, without awaiting the result of bacteriological examination of the culture, an injection is given of fifty cubic centimeters of Roux serum. Whenever there are laryngeal symptoms eighty cubic centimeters are used. According to the general condition of the patient, without regard to the temperature, when there is albuminuria, circulatory troubles, or dyspnea, a second injection of twenty cubic centimeters is given on the next day, so as to reach one hundred cubic centimeters, an amount that should always be given. Antidiphtheritic serum used in this way is absolutely harmless. The usual doses given in books are entirely too small to avert the serious complications and produce a rapid and secure recovery. Nephritis, myocarditis, and paralysis are prevented and convalescence is rapid. Local treatment should be carried out with a view to destroying the bacteria in the throat and keeping the respiratory organs in an aseptic condition. Feeding should be poor in chlorides, so as not to overburden the kidneys, and to give those organs the opportunity of carrying off the poisons. Water should be used in plenty as a drink. All severe cases may be avoided, and death is unknown, while all cases make a rapid and satisfactory recovery.

Treatment of Measles.—M. J. Hallé (*La Presse Méd.*, April 4, 1908) says that measles, which is a mild disease in the family, where its spread can be limited by isolation, and where hygiene, so important to this disease can be carried out, becomes a fatal one in hospitals and in the families of the poor. The care of an ordinary case consists in carrying out the ordinary hygienic measures. The child should be isolated in a well ventilated, not too brightly lighted room, but should not be kept in the dark. It should have plenty of fresh air, and be sponged daily, and furnished with clean clothing. Food should be bland, and purgatives avoided, since diarrhea is a common symptom. The eyes should be washed with warm boracic acid lotion, and nose, throat and mouth cleansed daily. The cough should not be abolished, but moderated by the use of acetate of ammonia. The child should remain in bed for two weeks and not go out of doors too soon. In the complicated forms the picture is quite different. In the asphyxiating form cold baths are useful. In bronchopneumonia warm baths and compresses about the chest

are most valuable. In asthenic forms mustard baths assist reaction. Diffusible stimulants and strychnia) with injections of camphorated oil are valuable supporting measures. When there is laryngitis the air must be kept moist by the steam spray. The ear complications may be forestalled by warm instillations into the ears in case of pain.

Ophthlmo-Tuberculin Reaction in Children, Especially in Infants.—Cassoute (*Arch. de Méd. des Enf.*, April, 1908) has made an especial study of the ophthlmo-tuberculin reaction in children and babies, to ascertain how frequently tuberculosis is transmitted directly to the infant from the mother. At the Crèche of the Hospital Marseille in August and September, 1907, all the children were inoculated. Almost all infants admitted to the Crèche are suffering from malnutrition, and are fit subjects for tuberculosis. The author made eighty instillations with a 2 per cent. solution, with eight positive results. He then used for inoculation a solution of five per cent. With this, thirty-eight infants gave thirty-five negative results, and three cases were doubtful. A third series was made with one per cent. and here there were thirty negative results. In all there were six doubtful reactions out of seventy-three patients and one positive. With the positive tests the reaction began early in the night after inoculation, was at its height through the night, and was disappearing in the morning. The negative reactions were obtained in seventeen normal infants, ten feeble from birth, and forty-six feeble at birth and still feeble at the time of the test. Of thirteen reactions made with children in the medical and surgical service of the hospital the author gives the following results: One case of tubercular meningitis in a child of nine years with negative result from the test; diagnosis confirmed by the test of the cerebro-spinal fluid, which was positive. Ten year old child with bronchitis and emaciation, child of a tuberculous mother negative. Gastroenteritis and cachexia in a child of two and a half years, and gastroenteritis in a child of six months both negative. Child of ten years with constant fever and doubtful signs at the right apex, with negative results. White swelling in state of suppuration in the neck, with negative result. Arthritis of the shoulder with negative result. When there is a positive reaction at the first test the diagnosis is of value. The result may be delayed some hours. In one case there was such a marked reaction that an ulcer of the cornea was developed which left a scar. In some cases a second test will give a positive reaction after the first has failed. The author considers it demonstrated that latent tuberculosis in infants is demonstrated to be rare.

Grave Chorea and its Relation to Septicemia.—B. Sachs (*Med. Rec.*, March 28, 1908) classifies the forms of chorea, omitting the post-hemiplegic type, as chorea minor; cases associated with endocarditis, rheumatism or fever; chorea gravidarum; senile choreas and possibly chronic chorea associated with arteriosclerosis, nephritis and other degenerative changes, and septicemic

choreas. He reports two cases of the last class, one due to a staphylococcus general septicemia, the other to an undetermined organism. Septicemic chorea may occur at any age, usually in young persons. After a somewhat indefinite prodromal period of restlessness and slight twitchings, universal choreic movements of an extravagant type set in, which constitute the most prominent symptom of the disease. The jactations are so severe that the patients have to be restrained or have to be carefully watched in padded beds. Erosions appear all over the body and particularly on the parts most apt to be rubbed or bruised by contact with the bedclothes and the bed posts, chiefly on the buttocks, elbows and ankles. Speech is difficult at an early stage of the disease and later becomes impossible, due in part to the extreme choreic movements of the lips, tongue, and muscles engaged in the mechanism of speech, also to the accompanying mental change which may vary from mild stupor and apathy to a condition of active delirium. The movements are lessened during sleep, but sleep is fitful and, as a rule, can be induced only by large doses of hypnotics and sedatives. After a period varying from one to two weeks, the patient passes from the state of continued restlessness into stupor and coma. After a further period of a few weeks, death usually supervenes. High fever is observed from the beginning to the end of the disease. A universal erythema bearing all the marks of a toxic eruption occurs in the earlier stage.

Acute Glandular Fever.—G. I. Jones (*Amer. Jour. Med. Sci.*, March, 1908) says that acute glandular fever is a very common disease, unrecognized, and that it is frequently mistaken for aberrant forms of typhoid or influenza. The onset is usually sudden, with headache, pain in the abdomen, vomiting, anorexia, and probably chills. The bowels are constipated, but the patient may rarely suffer from diarrhea; the tongue is coated, the face flushed; the evening temperature is 102° to 104° F., the morning temperature a degree or a degree and a half lower. The pulse rate is 90 to 130. On the second to the fifth day the enlarged glands appear, and during the course vary in size from a pea to a pigeon's egg, are quite tender, but there is rarely any redness or swelling of the skin. The swelling of the glands persists for two or three weeks. Many patients complain of little or nothing until the glands of the neck seem suddenly to enlarge, especially under and in front of the sternomastoid. The enlargement usually subsides in a week or two. The lymph nodes are hard, tender, and freely movable. The axillary and inguinal nodes are usually involved, the spleen is enlarged in 80 per cent. of the cases, the liver in 70 per cent. Convalescence is usually rapid.

Teeth of Congenital Syphilis.—C. E. Wallis (*Brit. Jour. Child. Dis.*, March, 1908) expresses his belief that notching of the permanent lower central incisors occurs fairly frequently in congenital syphilis.

Infantile Inherited Syphilis and Tardy Inherited Syphilis.—C. S. Bull (*Med. Rec.*, April 4, 1908) makes an urgent appeal for the early and more careful examination of the eyes of infants and young children where syphilis is suspected or known to exist in the parents or family. The examination should begin with the newborn infant, and, where possible, should be repeated at intervals until the infant has reached adult life. His experience has convinced him that the cases of intrauterine disease of the deeper tissues of the eye are far more common than is usually supposed. As a natural corollary to this proposition, it follows that the earlier the existence of such disease is recognized, its cause known, and proper treatment instituted, the better the prognosis as to the ultimate vision.

Treatment of Eczema in Children.—J. M. Winfield (*N.Y. Med. Jour.*, March 21, 1908) says that the treatment of eczema in infants and young children consists in the care of the child and the treatment of the disease proper, and of these the former is the more important. The clothing of the child should be as light as possible. Many children have an inherited idiosyncrasy to woolens. Most mothers and nurses make the mistake of keeping the baby too thickly covered; the clothing and covering should be just sufficient to protect the child. Care should be taken not to have the binders or bands of the clothing too tight upon children with sensitive or tender skins. It would be well if bathing could be avoided, but it is almost impossible to properly remove crusts, soiled secretions, and debris without water, or even soap and water. The water should be soft, rain or spring water or water that has been boiled and cooled. Soap should be avoided as far as possible. After the child has been thoroughly dried, the body, diseased portion and all, should be thoroughly innuncted with some bland grease, such as cold cream or almond oil. Much of the olive or almond oil procured from the drug store is apt to be rancid, and the cold cream so badly made that it acts injuriously on sensitive skins. Instead of an oil, a dusting powder may be used, preferably talcum powder, or oxide or stearate of zinc with or without bismuth. A child with eczema should be handled as little as possible. The majority of eczematous children have been or are fed on artificial foods. The proper food is breast milk and its best substitute is modified cow's milk. After the child has cut its teeth milk should still constitute the bulk of its diet, with the addition of beef juice, cream, dry bread, and zwieback, and in the strumous cases benefit can be derived from the judicious administration of oils and fats; orange juice and baked apple can also be added to the dietary; it is often necessary to direct the mother to give the child frequent and liberal draughts of either soft or boiled water, to assist in the elimination of waste material. Most eczematous children are constipated; but no laxative should be given in large enough doses or for a sufficient length of time to cause purgation; the dose should be just large enough to relieve the constipation and

regulate the bowels, except in those children that are heavy feeders and poor eliminators then an initial dose of either calomel or castor oil can be prescribed to rapidly clean out the intestinal tract. In strumous eczema, codliver oil and iodid of iron are indicated. In syphilitic cases small doses of calomel or bichlorid of mercury will often cure when other measures fail. Pruritus can usually be relieved by external applications; if not, small doses of bromide or chloral can be given, but the bromides are capable of causing a serious looking dermatitis, and when the skin is already diseased this drug should be most judiciously employed. Arsenic does little or no good to the cutaneous disease and is apt to disturb the digestive processes; this drug is only indicated when its tonic effect is desired. The important rule regarding internal medication is to give as little medicine as possible. The cardinal principle of external treatment is not to apply anything to the skin which will irritate it. All ointments, lotions or powders should be bland and protective.

Use of X-ray in Study of Diseases of Children.—While speaking of the value of the *x*-ray in connection with the exact diagnosis of osseous anomalies, fractures in the neighborhood of joints and early pulmonary tuberculosis in children, A. W. George (*Bost. Med. and Surg. Jour.*, March 19, 1908) insists especially upon its importance in connection with tuberculous and non-tuberculous infections of the bones. A certain number of cases of so-called "hip disease," by which tuberculosis is usually meant, are shown by the *x*-ray to be acute, subacute or chronic osteomyelitis. The location of the disease in these cases is outside of the joint capsule, and yet it gives rise to symptoms which clinically are those of hip disease. These cases are frequently treated as tuberculosis of the hip. The Röntgen ray will give more information in these cases than tuberculin or any other methods of examination which we have for diagnosis. It gives, first of all, the location of the focus of disease, whether it is within the capsule or without, what parts are affected, and what the gross changes are from the normal. If it is found outside of the capsule, it is operable, even though it may be a tuberculous focus.

Chronic Joint Disease of Still's Type.—E. N. Cunliffe (*Med. Chron.*, March, 1908) records a case of Still's disease, an affection which he defines as a chronic progressive enlargement of the joints, associated with enlargement of lymphatic glands, and usually of the spleen. He says that his observations upon this case clearly point to tuberculosis having an important part in the production of the joint changes found in Still's disease. The question as to whether the changes are due to direct invasion of the joints by the tubercle bacillus or due to the action of a toxin produced by the tubercle bacilli settled in some other nidus, is more difficult to decide. The observations of others seem to be strongly in favor of the view that tubercle bacilli are actually present in the joints. The low tubercle opsonic index observed when the writer's patient first came under observation points

rather to some local tubercular infection than to a general toxemia, which one would expect to raise the opsonic index. It is possible, of course, that we have to deal with a mixed infection since the joint lesions are not unlike those met with in cases of "absorption arthritis." There was no evidence in the author's case of any source of any septic infection.

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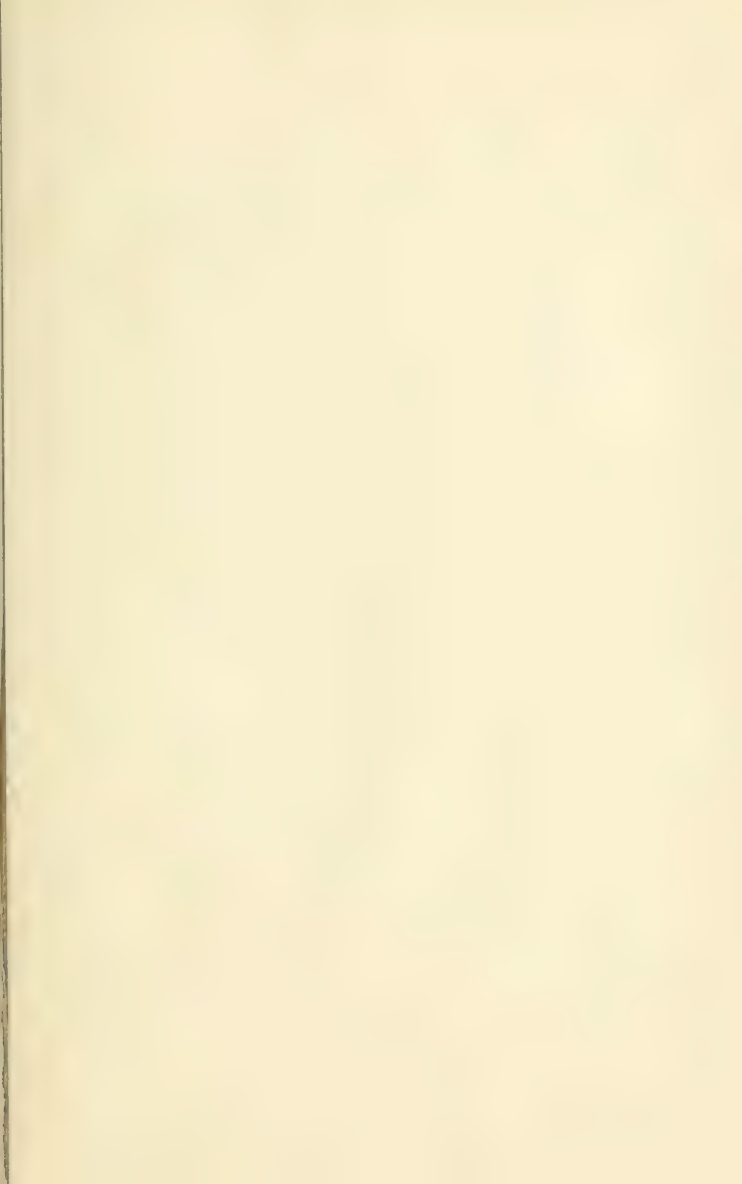
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